



APPROVED MINUTES

October 20, 2022 Standards Committee Meeting

November 29, 2022

TO: Standards Committee

FROM: Scott Trammell, Secretary

RE: Minutes from the October 20, 2022, Standards Committee Meeting

The Standards Committee meeting was called to order by Mr. Pankow, Chair, at 09:00 a.m. on October 20, 2022, which was held virtually via *Teams* (Microsoft application). The meeting was adjourned at 11:18 a.m.

The following committee members were in attendance:

Gregory Pankow, Chairman, Director, Construction Management
Anne Rearick, Engineering and Asset Management
Joe Bruno*, Traffic Engineering
Jim Reilman, Division of Materials and Tests
Behrooz Vakily**, Division of Contract Administration
Joseph Novak, Construction Management
Pankaj Patel***, Pavement Engineering
Kurt Pelz, Construction Technical Support
Mark Orton, Highway Engineering
Mike Koch, District Construction, Fort Wayne District
Peter White, Bridge Engineering

*Proxy for Dave Boruff

**Proxy for John Wooden

***Proxy for Kumar Dave

Also, presence of the following throughout the meeting was captured by the *Microsoft Teams*:

Awwad, Nathan, INDOT
Barney, Bruce, INDOT
Bazlamit, Subhi M, INDOT
Beeson, Matthew, INDOT
Boruff, Dave, INDOT
Corrice, Zachariah, INDOT
Cruz, Elena, INDOT
Duncan, Steve, INDOT

Martin, Richardyne, INDOT
Mazumder, Abul, INDOT
Mouser, Elizabeth, INDOT
Nelson, Mike, INDOT
Osborn, Dan, ICI
Patterson, Patrick, INDOT
Podorvanova, Lana, INDOT
Ritter, John, INDOT

Duncan, Thomas, FHWA
Encarnacion, Marielis, INDOT
Fisher, Steve, INDOT
Harris, Tom, INDOT
Kachler, Mischa, INDOT

Siddiki, Nayyar Zia, INDOT
Thomas, Elizabeth, INDOT
Thornton, Donald, INDOT
Todd Scott, GridLock Traffic Systems, Inc
Trammell, Scott, INDOT

The following items were discussed:

A. GENERAL BUSINESS ITEMS

OLD BUSINESS (No items on this agenda)

NEW BUSINESS

1. Approval of the Minutes from the [September 15, 2022 meeting](#)

Mr. Pankow requested a motion to approve the Minutes from the September 15, 2022 meeting.

Motion: Mr. Novak
Second: Mr. Reilman
Ayes: 9
Nays: 0

ACTION: PASSED AS SUBMITTED

B. CONCEPTUAL PROPOSAL ITEMS

[Preparation of 2024 Standard Specifications \(Division 500\) for publishing \(K. Pelz\) pg.6](#)

Comments received:

Mr. Koch stated that he understands the need to prove mix designs prior to placing 501 pavement, yet 702 mixtures do not require a trial batch. In an effort to decrease Department burden and gain efficiency/flexibility in our uncertain time, are trial batches always needed, especially for situations where time is not critical as 506.04 already addresses open to traffic concepts for time critical situations. Could the trial batch requirement be struck? Mr. Pelz responded that our Specification review process was to review the existing language and make editorial changes of that language, replace outdated language, and correct spelling. The question you ask would be better answered by Jim Reilman and the M&T team. It is their process. If there is a change proposed, it would need to go through the Standards Committee process for approval. Mr. Reilman replied that is something that M&T is discussing. However, with the multitude of problems with the transition to type 1L cement, we are not likely to make any changes regarding trial batches until things settle down and become more consistent.

Mr. Koch also mentioned that 'in accordance with' usually references a threshold to achieve. The upper section of the Basis of Payment usually includes 'will be paid for in accordance with' language and the lower Basis of Payment section defines what costs are included in the various items. What is the intent for 'in accordance with 506.14' (lower Basis of Payment section)? Is the intent "...in the cost of the 506 partial depth patching item."? Mr. Trammell

responded that you will find this throughout the entire spec book and in this particular case, it simply means that is where that pay item is located, and how it is to be paid. It merely points the reader to the correct spec section.

C. STANDARD SPECIFICATIONS, SPECIAL PROVISIONS, AND STANDARD DRAWINGS PROPOSED ITEMS

OLD BUSINESS (No items on this agenda)

NEW BUSINESS

[Item No. 1 \(2022 SS\)](#) [Mr. Reilman](#) [pg 21](#)

2022 Standard Specifications:
DIVISION 200

EARTHWORK (*various sections*)

ACTION:

PASSED AS REVISED

[Item No. 2 \(2022 SS\)](#) [Mr. Reilman](#) [pg 26](#)

2022 Standard Specifications:
DIVISION 300

AGGREGATE PAVEMENT AND BASES (*various sections*)

ACTION:

PASSED AS SUBMITTED

[Item No. 3 \(2022 SS\)](#) [Mr. Reilman](#) [pg 30](#)

2022 Standard Specifications:
DIVISION 400

ASPHALT PAVEMENTS (*various sections*)

ACTION:

PASSED AS REVISED

[Item No. 4 \(2022 SS\)](#) [Mr. Reilman](#) [pg 36](#)

2022 Standard Specifications:
DIVISION 600

INCIDENTAL CONSTRUCTION (*various sections*)

ACTION:

PASSED AS SUBMITTED

[Item No. 5 \(2022 SS\)](#) [Mr. Reilman](#) [pg 40](#)

2022 Standard Specifications:
DIVISION 800

TRAFFIC CONTROL DEVICES AND
LIGHTING (*various sections*)

ACTION:

PASSED AS SUBMITTED

[Item No. 6 \(2022 SS\)](#) [Mr. Reilman](#) [pg 44](#)

2022 Standard Specifications:
101.01

Abbreviations

306.07 Asphalt or PCCP Milling to a Specified Average Depth
 306.08 Asphalt Overlay Removal
 306.09 Transition Milling
 SECTION 403 CMA PAVEMENT BLANK
 409.02 Mixing Plant
 414.07 Equipment
 417.08 Equipment

ACTION: PASSED AS REVISED

Item No. 7 (2022 SS) Mr. Reilman pg 52

2022 Standard Specifications:
 Division 900 Materials Details (*various sections*)

ACTION: PASSED AS REVISED

Item No. 8 (2022 SS) Mr. Reilman pg 67

Recurring Special Provision:
 216-R-745 CELLULAR CONCRETE FILL, CCF

ACTION: PASSED AS SUBMITTED

Item No. 9 (2022 SS) Mr. Boruff pg 72

Recurring Special Provision:
 808-T-xxx PAVEMENT MARKINGS
 Standard Drawings:
 E 606-SHCG Series
 E 808-DLIM Series
 E 808-MKNB Series
 E 808-MKRM Series

MARKUPS AND PROPOSED DRAFTS ARE AVAILABLE AT:
https://www.in.gov/dot/div/contracts/standards/sc/2022/oct/Item_09Stddrawings%20221020.pdf

ACTION: PASSED AS REVISED

Item No. 10 (2022 SS) Mr. Reilman pg 82

2022 Standard Specifications:
 509.03 Concrete Mix Design
 509.04 Concrete Mix Criteria
 509.06 Trial Batch
 509.10 Concrete Mixing and Transportation
 509.12 Placing and Finishing Concrete

ACTION: PASSED AS SUBMITTED

[Item No. 11 \(2022 SS\)](#)

[Mr. Reilman](#)

[pg 88](#)

2022 Standard Specifications:

501.04

Concrete Mix Design

Recurring Special Provision:

702-R-739

STRUCTURAL CONCRETE AND USE OF OPTIMIZED
AGGREGATE GRADATION IN CONCRETE

ACTION:

PASSED AS SUBMITTED

cc: Committee Members
FHWA
ICI

APPROVED MINUTES

CONCEPTUAL PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: INDOT Standard Specifications have been in circulation since 1934 and have been regularly updated by adding new or revising existing statements, work procedures, materials, methods, etc.

Prior to publishing a 2024 Standard Specifications book (effective September 1, 2023), the review of the current edition is underway and a summary of proposed edits to the DIVISION 500 – CONCRETE PAVEMENT is shown.

PROPOSED SOLUTION (conceptual): Continue to review of all Divisions (100 thru 900) of the 2024 (draft) Standard Specifications and to make editorial (grammar) corrections as found necessary. Inform offices on questionable or outdated information and seek any necessary corrective action. Statements that are not clearly formulated or their written intentions are hard to follow have been rewritten, grammatical errors have been corrected and are proposed here for your review. Proposed revisions to Division 500 were made with this concept in mind and are shown here for your review.

APPLICABLE STANDARD SPECIFICATIONS: 2022 Standard Specifications and approved RSPs

APPLICABLE STANDARD DRAWINGS: n/a

APPLICABLE DESIGN MANUAL SECTION: n/a

APPLICABLE SECTION OF GIFE: n/a

APPLICABLE RECURRING SPECIAL PROVISIONS: various RSPs (if affected)

PAY ITEMS AFFECTED: n/a

APPLICABLE SUB-COMMITTEE ENDORSEMENT: ad-hoc Specification's review group: Kurt Pelz, Scott Trammell, Lana Podorvanova. Feedback also received from Nathan Awwad.

IMPACT ANALYSIS (attach report): n/a

Submitted By: Kurt Pelz

Title: Construction Management Technical Support

Organization: INDOT

Phone Number: 317-691-4800

Date: 10/03/2022

[DIVISION 500, EDITS BEGIN HERE]

501.02 Quality Control

The mixture for PCCP shall be produced by an ~~approved~~ *qualified* plant in accordance with ITM 405, transported, and placed ~~according to~~ *in accordance with* a QCP. ~~The QCP shall be prepared and submitted by the Contractor in accordance with ITM 803, for PCCP. The QCP shall contain a plan for placing PCCP in cold weather, as defined in 501.15. The cold weather plan shall, at a minimum, provide details to address changes in materials, concrete batching and mixing processes, construction methods, curing, temperature monitoring, and protection of in-situ PCCP.~~ [---]

[---]

501.04 Concrete Mix Design

~~The concrete mix design submittal, CMDS,~~ shall be in accordance with 501.05. The CMDS shall be submitted to ~~and approved by~~ the DTE. The CMDS shall be submitted a minimum of seven calendar days prior to the trial batch utilizing the Department provided spreadsheet and shall include the following:

[---]

[---] If the test beams indicate a modulus of rupture that is not in accordance with 501.06, production shall stop and all PCCP constructed with the new CMDS will be adjudicated as a failed material in accordance with ~~normal Department practice as listed in 105.03.~~ *If all properties are in accordance with 501.06, the DTE will issue the CMDP.*

[---]

501.05 Concrete Mix Criteria

The CMD shall contain at least one, but not more than two SCM²ss, and produce workable concrete mixtures having the following properties:

Minimum total cementitious content.....	450 lb/cu yd
Allowable amount of single SCM,	
% of total cementitious, by weight.....	25.0 – 40.0%*
Allowable amount of two SCM ² ss,	
% of total cementitious, by weight.....	25.0 – 40.0%**

[---]

Target Air Content.....	7.0%
Minimum modulus of rupture	570 psi at 7 days

[---]

** Ternary binder systems shall contain two SCM²ss such as fly ash and slag cement, or fly ash and silica fume, or slag cement and silica fume, combined with a cement. If a blended cement is used, it shall not be combined with a plant added SCM of the same type of ~~pozzolan~~ SCM to create a ternary system. For example: a Type IP shall not be combined with plant-added fly ash and slag cement. When using a Type IL blended cement, the plant addition of both fly ash and slag cement will be allowed. The limestone dust in Type IL cement will not be considered in calculating the amount of SCM. Silica fume shall only be an SCM component of a ternary binder system. If a blended cement is used, silica fume shall only be an SCM component of the ternary system.

[---]

Hand placed paving operations meeting the requirements of 508.04(c) shall utilize concrete

having a ternary binder system that contains silica fume as one of the SCM²ss when the ambient temperature is below 50°F during placement or when the ambient temperature will fall below 50°F before the opening to traffic strength is attained. Concrete with a ternary binder system containing silica fume as one of the SCM²ss, may be used in any approved method of pavement placement without restriction. Placement operations that involve form riding equipment in accordance with 508.04(b), may ~~utilize an approved~~ use a binary CMDP, without restriction.

[---]

Lots and sublots will be numbered and tested for a given pay item regardless of the number of CMD²ss used and will be closed out at the end of the paving season or construction phase.

[---]

~~In the event that~~ If an acceptance sample is not available to represent a subplot, all test results of the previous subplot will be used for acceptance. If the previous subplot is not available, the subsequent subplot will be used for acceptance.

[---]

501.16 Placing Concrete

The batches shall be deposited ~~so as to have a uniform mix and require as little rehandling as possible~~ uniformly requiring minimal rehandling. The plastic concrete shall not be segregated during placement. Dowel bars and assemblies shall not be displaced during placement of concrete.

Concrete shall be thoroughly consolidated against the faces of all forms or adjacent concrete surfaces. Hand placed concrete shall be thoroughly consolidated with the use of a vibrator. Vibrators shall not be operated in any one location ~~so as to bring~~ avoid bringing excessive mortar to the surface. ~~and~~ Vibrators shall not come in contact with a dowel bar assemblies, subgrade, subbase, or forms.

[---]

The Contractor shall have ~~available at all times~~ sufficient materials, *available at all times*, for the protection of unhardened PCCP from the effects of rain. Covering material such as burlap or polyethylene sheeting shall be provided. When rain appears imminent, paving operations shall stop. All available personnel shall be used to cover the PCCP.

[---]

501.20 Curing

[---] For formed PCCP, ~~immediately after the forms are removed~~, the sides of the PCCP shall be cured *immediately after the forms are removed*.

[---]

[501.28]

(a) Modulus of Rupture

When test results for modulus of rupture from flexural strength testing exceed the allowable tolerance, a pay factor will be assessed as follows:

1. Lots

Lot Average Modulus of Rupture	
Psi	Pay Factors
570 and above	1.00
565 – 569	0.98
560 – 564	0.96

CONCEPTUAL PROPOSAL ITEM

REVISION TO 2022 STANDARD SPECIFICATIONS: DIVISION 500 – CONCRETE PAVEMENT

555 – 559	0.94
550 – 554	0.92
545 – 549	0.89
540 – 544	0.86
535 – 539	0.83
525 – 534	0.78
515 – 524	0.72
514 or less	*
* The PCCP will be adjudicated as a failed material in accordance with normal Department practice as listed in 105.03. The PCCP may be subject to removal and replacement or left in place with reduced or no payment.	

2. Sublots

If an individual subplot value is less than 500 psi, the PCCP will be adjudicated as a failed material in accordance with ~~normal Department practice as listed in~~ 105.03. For a subplot completely removed, the subplot test value from the replacement subplot will replace the original test value.

(b) Air Content

When test results for air content exceed the allowable tolerance or range, a pay factor will be assessed as follows:

1. Lots

Lot Average Air Content	
Percent, %	Pay Factors
> 9.8	*
9.7 – 9.8	0.85
9.5 – 9.6	0.95
9.3 – 9.4	0.99
5.8 – 9.2	1.00
5.7	0.93
5.6	0.90
5.5	0.85
5.4	0.79
< 5.4	*
* The PCCP will be adjudicated as a failed material in accordance with normal Department practice as listed in 105.03. The PCCP may be subject to removal and replacement or left in place with reduced or no payment.	

Lot Range for Air Content	
Percent, %	Pay Factors
0.0 – 2.5	1.00
2.6 – 3.0	0.99
3.1 – 3.5	0.97

> 3.5	*
* The PCCP will be adjudicated as a failed material in accordance with normal Department practice as listed in 105.03. The PCCP may be subject to removal and replacement or left in place with reduced or no payment.	

2. Sublots

If a subplot value is less than 5.5% or greater than 10.0%, the PCCP will be adjudicated as a failed material in accordance with ~~normal Department practice in accordance with~~ 105.03. For a subplot completely removed, the subplot test value from the replacement subplot will replace the original test value.

(c) Thickness

When test results for pavement thickness do not meet the specified thickness, a pay factor will be assessed as follows:

Sublot Pay Factors for Thickness	
Average core depth, ACD Design depth, DD	
ACD minus DD	Pay Factor
> +0.5 in.	1.05
+0.3 in. to +0.5 in.	1.02
±0.2 in.	1.00
-0.3 in. to -0.5 in.	0.96
-0.6 in. to -0.7 in.	0.90
-0.8 in. to -1.0 in.	0.80
< -1.00 in.	*
* The PCCP will be adjudicated as a failed material in accordance with normal Department practice as listed in 105.03. The PCCP may be subject to removal and replacement or left in place with reduced or no payment.	

[---]

502.05 Job Control

Control of PCCP for air content, slump, or relative yield will be determined ~~on the basis of~~ tests performed by the Engineer in accordance with 505. Concrete and necessary labor for sampling shall be furnished as required by the Engineer. Testing will be in accordance with the Frequency Manual.

[---]

If forms are used, they shall be firmly supported by the subbase or subgrade for the entire length of the form at the specified alignment and grade. The alignment of the forms shall not deviate more than 1/4 in. in the horizontal direction from the planned PCCP width for tangent sections.

[---]

502.10 Concrete Mixing and Transportation

Concrete shall be uniformly mixed when delivered to the job site. Batch tickets for each load of PCC shall indicate the weight of cement, pozzolan, ~~and~~ aggregates, volume or weight of

water, and the type and volume of admixtures. The weight of the cement shall be within 1% of the CMDP, the saturated surface dry weight of the aggregates shall be within 2% of the CMDP, and the volume or weight of water shall be within 1% of the required amount.

[---]

502.12 Placing Concrete

The batches shall be deposited ~~so as to have a uniform mix and require as little rehandling as possible~~ *uniformly requiring minimal rehandling*. The plastic concrete shall not be segregated during placement. Rakes shall not be used to handle plastic concrete. Dowel bars and assemblies shall not be displaced during placement of concrete. Plastic concrete shall not be contaminated with earth or other foreign matter.

Concrete shall be thoroughly consolidated against the faces of all forms or adjacent concrete surfaces. Hand placed concrete shall be thoroughly consolidated with the use of a vibrator. Vibrators shall not *be* operated in any one location ~~so as to bring~~ *avoid bringing* excessive mortar to the surface. ~~and~~ *Vibrators* shall not come in contact with ~~a~~ *dowel bar assemblies*, subgrade, subbase, or forms.

[---]

The Contractor shall have ~~available at all times~~ sufficient materials, *available at all times*, for the protection of unhardened PCCP from the effects of rain. Covering material such as burlap or polyethylene sheeting shall be provided. When rain appears imminent, paving operations shall stop. All available personnel shall be used to cover the PCCP.

[---]

[502.21]

(b) Average PCCP Thickness

The thickness of the PCCP for each section shall be the average lengths of all cores from the section. However, no cores shall be included from areas for which no payment will be made. Where PCCP has been removed and replaced, the initial core lengths will be discarded and the core lengths of the replaced PCCP will be substituted. Any core measurements exceeding the specified PCCP thickness by more than 1/2 in. will be recorded as the specified PCCP thickness plus 1/2 in. Calculations shall be to the nearest 0.1 in.

[---]

503.01 Description

This work shall consist of the construction of joints in PCCP ~~pavements~~, placing dowel bar assemblies and joint sealing operations in accordance with 105.03.

[---]

503.03 Joints

Joints shall be constructed in accordance with the type, ~~and~~ dimensions, and ~~at the~~ locations shown on the plans or as directed. All joints shall be perpendicular to the subgrade.

[---]

(e) Terminal Joints

A terminal joint of the type specified shall be constructed at the locations as shown on the plans. The embankment shall be shaped to the required grade and section, free from all ruts, corrugations, or other irregularities, and uniformly compacted ~~and approved~~ in accordance with 203. The embankment shall be ~~furnished~~ *finished* within a tolerance of 1/2 in. from the grade as shown on the plans. The subgrade shall be prepared as shown on the plans and in accordance with

207. The sleeper slab shall be placed on top of the prepared subgrade.

1. Terminal Joint, Type PCCP

Terminal joint, type PCCP, shall consist of a sleeper slab, polyethylene bond breaker, pre-compressed foam joint, and ~~jointed reinforced concrete pavement~~, JRCP, transition slabs. The polyethylene bond breaker shall be an approved polyethylene sheeting having a thickness of 6 mils or greater. The portion of the sleeper slab on which the polyethylene bond breaker is to be placed shall be finished to a smooth trowel finish. The pre-compressed foam joint shall be in accordance with 724 and as shown on the plans. The concrete and placement for JRCP transition slabs shall be in accordance with 502 and as shown on the plans. Steel reinforcement shall be epoxy coated and placed in accordance with 703. The metal chairs, spacers, clips, wire, or other mechanical means used for fastening or holding reinforcement in place shall be epoxy coated.

[---]

For D-1 contraction joints, the cost of dowels, dowel bar assemblies, backer rod, joint sealants, and all necessary incidentals shall be included in the cost of D-1 contraction joints.

For the construction of expansion joints, the cost of dowels, dowel bar assemblies, expansion caps, joint filler, joint sealants, and all necessary incidentals shall be included in the cost of the expansion joint with load transfer.

The cost of the sleeper slab, reinforcing bars, bond breaker, pre-compressed foam joint, joint sealant, and all necessary incidentals shall be included in the cost of the terminal joint. When required, removal of an existing terminal joint and sleeper slab shall be included in the cost of the terminal joint.

[---]

[504.03]

Areas of PCCP which are not finished in accordance with these requirements shall be corrected by re-texturing.

Re-texturing shall consist of cutting longitudinal or transverse grooves in the PCCP surface by means of saw blades or other approved devices. The grooves shall be spaced 3/4 in. center to center and be 1/8 in. in width and depth. Alternative patterns may be used, subject to approval. The PCCP surface, after cutting, shall not be polished.

[---]

[504.04]

When forms are used, the edges of the pavement shall be cured immediately upon removal of the forms. The edges shall be covered with curing materials equal to the material used on the surface or banked with soil 12 in. wide or greater.

[---]

(b) Double Burlap

The PCCP shall be covered with wet burlap, laid directly on the surface, and kept wet with a fine spray of water. This initial burlap shall receive an additional covering of wet burlap no later than 9:00 a.m. the day following its placement. The two layers of burlap shall be kept wet for the required curing period.

[---]

504.06 Basis of Payment

The cost of finishing ~~and the PCCP surface~~, furnishing and placing curing materials shall be included in the cost of the PCCP.

[---]

506.03 Concrete Mix Design

A ~~concrete mix design submittal~~, CMDS, shall be in accordance with 506.04. The CMDS shall be submitted to the DTE. The CMDS shall be submitted a minimum of seven calendar days prior to the trial batch ~~utilizing~~. ~~The CMDS shall use the Department provided spreadsheet and shall include the following:~~

[---]

[506.04]

Blended portland pozzolan cements, fly ash, or slag cement may only be incorporated in the concrete mix when the ambient temperature is above 50°F during the entire placement period. If type IP, type IP-A, type IS, or type IS-A cements are to be used, the minimum portland cement content shall be increased to 598 lb/cu yd. The use of fly ash or slag cement will not be allowed when blended cement types IP, IP-A, IS, or IS-A are used.

[---]

[506.05]

A sufficient number of flexural strength test beams shall be made and will be tested to demonstrate that opening to traffic strength is achieved at an age consistent with the proposed range of usage of the mixture. At a minimum, flexural strength gain will be determined at the target opening to traffic times and at the specified 24 h and 3 day targets as specified by the respective mix criteria. The Engineer will test the concrete's air content, ~~and~~ determine the water/cementitious ratio, and prepare and test flexural beams. The flexural strength will be determined by averaging a minimum of two beam breaks. The Department will provide the apparatus to test the beams for flexural strength.

[---]

506.06 Job Control

Control of PCCP for air content, relative yield, and flexural strength beams will be determined ~~on the basis of~~ tests performed by the Engineer in accordance with 505. Concrete and necessary labor for sampling shall be furnished as required by the Engineer. Testing for air content and relative yield will be on the first load of the day and once per every 50 cu yds.

(a) Beams for Validation of CMDP

At least one set, consisting of three beams per set, will be made once per every 150 cu yds of concrete placed and tested for compliance with either the 3-day or 7-day flexural strength requirements in accordance with 506.04, for the purpose of CMDP validation. Air content and relative yield will be measured on each sample of concrete from which beams are made.

Beams for validation shall be placed on the concrete pavement or shoulder adjacent to the patch and cured in a similar manner as the patch in accordance with 505.01(a) until patch area is open to traffic. At which point the beams shall be relocated off-site and standard cured in accordance with AASHTO T 23, Section 10.1.2 with the exception that the water does not need to be saturated with calcium hydroxide until the 3-day or 7-day time period has elapsed.

[---]

[506.08(b)]

Full depth saw cutting and removal shall be extended at the direction of the Engineer until sound PCCP is encountered to allow the drilling and installation of dowel bars for load transfer; ~~without inflicting further damage to the existing PCCP~~. Removal operations shall not damage the existing PCCP that is sound and is to remain in place.

Existing subbase shall be completely removed. Before removing any type of asphalt treated, cement treated, or concrete subbase, the Contractor shall saw cut the outline of the removal area using a power-driven saw with a diamond blade. The Contractor shall cut the asphalt treated subbase at least 2 in. deep on a neat line perpendicular to the subbase surface. The Contractor shall cut the cement treated subbase or concrete subbase full depth.

[---]

[506.11(b)]

All patches ~~greater~~ longer than 15 ft shall be placed in accordance with 502.12 and shall have joints in accordance with 503. Dowel bars shall be installed within the boundaries of the patch at a spacing as shown on the plans or as approved by the Engineer.

[---]

Patches constructed in accordance with 506.04(b) and containing CSA cement shall be water cured in accordance with 702.22(a)1 except that soaker hoses will not be required. Water curing shall be initiated after finishing and as soon as the concrete patch can support the wet covering. Water curing shall be maintained for a minimum of 1 1/2 h, and shall be removed no sooner than 1 h before the patch is opened to traffic.

[---]

[506.14]

The cost of PCCP removal, subbase removal, concrete, finishing, ~~and~~ curing, and sawing and sealing of joints shall be included in the cost of PCCP patching.

[---]

[507.03]

(a) Routing, Cleaning, and Sealing

Cracks in PCCP shall be routed and cleaned when specified. Cracks shall be routed with a routing machine capable of cutting a uniform shape to form a reservoir not exceeding 3/4 in. wide with a minimum depth of 3/4 in. The operation shall be coordinated such that routed materials do not encroach on pavement lanes carrying traffic and all routed materials are disposed of in accordance with 104.07. The cracks shall be cleaned with compressed air or by other suitable means. Air compressors shall be capable of producing a minimum air pressure of 100 psi. Water blasting shall not be utilized.

[---]

[507.04]

(a) Sawing, Cleaning, and Sealing

Joints in PCCP shall be sawed, cleaned, and sealed when specified. Air compressors shall be capable of producing a minimum air pressure of 100 psi. Water blasting shall not be applied under pressure which may damage the concrete. The existing joints shall be sawed to the width and depth as shown on the plans. Slurry or saw residue remaining in the slot shall be immediately flushed with water. Traffic may be allowed on the PCCP for up to seven calendar days after the saw cutting prior to sealing.

Joints shall be sealed with joint sealing materials in accordance with the sealant manufacturer's recommendations. Transverse joints shall be sealed with hot poured joint sealant, silicone sealant, or preformed elastomeric joint sealant. Longitudinal joints shall be sealed with hot poured joint sealant or silicone sealants.

[---]

507.08 Retrofit Load Transfer for PCCP

Retrofit load transfer consists of diamond saw slot cutting and placing dowel bar assemblies in the PCCP, parallel to the centerline of the roadway without damaging adjacent PCCP. The diamond-sawed slot shall be cut using two diamond saw blades per slot to cut the edges of the slot. The PCC within the slot and the burrs and bumps remaining in the base of the slots after cutting shall be removed with hand tools, or mechanical chipping hammers which shall not exceed a nominal 15 lb in weight and shall be operated at a maximum angle of 45° from the pavement surface.

[---]

507.10 Basis of Payment

Routing and sealing of cracks, filling of cracks, sawing and sealing of joints, and filling of joints will be paid for by the linear foot, complete in place. The accepted quantities of retrofit load transfer will be paid for at the contract unit price per each assembly installed, complete in place. PCCP patching will be paid for in accordance with 506.14. PCCP joint repair will be paid for in accordance with 509.19. Profiling will be paid for by the square yard. Undersealing and drilled holes will be paid for in accordance with 612.08.

~~The cost of temporary traffic control measures for routing, sealing or filling of cracks or joints, and profiling will be paid for in accordance with 801.18.~~

[---]

The cost of milling, cleaning, tacking, and all incidentals shall be included in the cost of the pay item, partial depth patching *in accordance with 506.14*.

The cost of cutting of slots, cleaning, dowel bars, dowel bar supports, dowel bar end caps, foam board, mortar, and curing materials shall be included in the cost of the pay item, retrofit load transfer.

The cost of cleaning, sealing materials, and all incidentals shall be included in the cost of the pay item cracks in PCCP, filled or joints in PCCP, filled.

The cost of routing, cleaning, ~~sealant~~ *sealing* materials, and all incidentals shall be included in the cost of the pay item cracks in PCCP, rout and seal. The cost of sawing, cleaning, ~~sealant~~ *sealing* materials, and all incidentals shall be included in the cost of the pay item joints in PCCP, saw and seal.

[---]

508.01 ~~Production~~ Mixing, Transportation, and Placement of PCC Mixtures

The Contractor shall provide and calibrate all equipment necessary for ~~the~~ mixing, transportation, and placement ~~operations for~~ *of* the PCCP.

[---]

The plant shall be equipped with a recording device capable of producing a ticket to permanently record the batch number, time of day, weight of all materials in the mix, volume or

weight of mixing water added, and admixture quantities or equipped with a suitable non-resettable batch counter which will *correctly* indicate ~~correctly~~ the number of batches produced. The CMD number shall be included on the ticket.

[---]

(d) Hoppers

Weighing hoppers shall be constructed to eliminate accumulation of materials and to discharge fully. The fine aggregate and coarse aggregate shall be weighed separately into a weigh hopper in the respective amounts defined in the CMD. Separate scales and hoppers shall be used for weighing the cement. Pozzolans may be weighed into the cement hopper in one cumulative operation provided that the portland cement is weighed in first.

[---]

3. Finishing Equipment

~~The finish device or machine~~ *Finishing equipment* shall be capable of producing a uniform surface free of voids and in accordance with the planned profiles and cross section.

A mechanical tube finisher shall consist of a single or multiple rotating strike-off/finish tubes setting approximately transverse to the longitudinal movement of the machine. The length of finish tubes shall be a minimum of 2 ft longer than the planned PCCP width. The forward speed of the machine as well as the rate of the finish tube rotation shall be variable and it shall be reversible to allow for multiple finish passes.

A vibratory screed finisher shall consist of a truss frame with a minimum base width of 1 ft, which extends across the transverse width of the PCCP. The frame shall extend 2 ft beyond the width of the PCCP and shall hold its shape when moved forward. The screed shall move forward with either hydraulic or manual winches, ~~which are~~ capable of maintaining the screed at a right angle to the direction of travel. The screed shall be vibrated as it moves forward and the vibration shall stop when forward motion ceases. Vibration shall be accomplished with mechanical driven eccentric weights or with auxiliary driven pneumatic vibrators.

[---]

508.09 Testing Facility and Equipment

(a) Testing Facility

~~The~~ Testing facility shall be capable of maintaining a controlled curing environment in accordance with AASHTO T 23 and contain sufficient storage tanks with curing solution to cure both production control and acceptance test beams.

[---]

509.03 Concrete Mix Design

~~A concrete mix design, CMD,~~ for the partial depth joint repair and bottom-half joint repair shall be identified as being one of the following types and shall be in accordance with 509.04.

- (a) Prepackaged concrete patching material, CPM
- (b) Ordinary portland cement-based concrete, OPCC
- (c) Rapid hardening cement-based concrete, RHCC
- (d) Latex modified concrete, LMC
- (e) Latex modified concrete, very early strength, LMC-VE
- (f) Rapid setting patch materials, RSP.

~~A concrete mix design submittal, CMDS, for OPCC, RHCC, LMC, and LMC-VE shall be submitted in accordance with 506.03, except that the trial batch shall be in accordance with 509.05. Prepackaged concrete patching materials, CPM and RSP, are not required to follow the submittal format of a CMDS, however, the Department shall be notified of their intended use. The CMDS, or notification of using CPM or RSP, shall be submitted a minimum of seven calendar days prior to the trial batch.~~

[---]

(b) RHCC, LMC, or LMC-VE Mixes

~~All RHCC, LMC, or LMC-VE mixes shall be proportioned to meet the following requirements and properties:~~

[---]

- ^E Concrete beams and cylinders cast for the purpose of evaluating the mix criteria shall be cured in accordance with AASHTO T 23 Section 10.1, Standard Cure conditions. RHCC and LMC-VE shall achieve the minimum modulus of rupture in 12 hours or less. LMC shall achieve the minimum modulus of rupture in 24 hours or less. *All RHCC, LMC, and LMC-VE mixes shall provide opening to traffic within the requirements for maintenance of traffic and lane closure restrictions.*

[---]

509.05 Quality Control Plan

~~A quality control plan, QCP, shall be in accordance with sections 1.1 through 4.7 of ITM 803, except that the Quality Control Technician shall be an ACI Certified Technician, Level I or higher. As a minimum, the QCP shall contain the following information concerning aspects of producing, placing, finishing, and curing the joint repair concrete for joint restoration:~~

[---]

- (e) Trial batch demonstration shall ~~be described as~~ *describe the* procedures, location, mixing equipment, batching sequence, accuracy, and verification. The identification and intended use of each concrete mix.
- (f) Batching of *the* concrete during repair operations shall be described to include weighing on scales, intended size of the batch, batching method, sequence, and mixing time. The methods to monitor materials used and the record of each batch shall also be included.
- (g) Process control of *the* concrete ~~to~~ *shall* address sampling and testing for slump, relative yield, air content, water cementitious ratio, and temperature. The frequency of tests shall be the first batch of the day and not less than three times per day including the first. If volumetric batching of concrete is utilized, the yield will be checked as described in 722.05(a) at the beginning of the day and not less than two times per day including the first load from each mobile mixer. The QCP shall include details as to actions in response to test results.

[---]

509.06 Trial Batch

A trial batch shall be produced and tested to verify that the repair concrete is in accordance

with the appropriate ~~concrete mix~~ criteria for CPM, OPCC, RHCC, LMC, LMC-VE, or RSP ~~material~~ *concrete mixes*. The trial batch shall be conducted prior to production. The equipment used for mixing concrete at the trial batch shall be the same as what is identified in the QCP for use during field production.

[---]

509.08 PCCP Removal

PCCP removal areas for partial depth repairs will be determined by sounding and will be marked. The Contractor shall remove all concrete to the limits shown on the plans or as directed by the Engineer. A machine configured to safely and consistently mill the necessary profile as detailed on the plans shall be provided. The teeth on the milling head shall be spaced at either 1/2 in. or 5/8 in. The milling machine shall be subject to approval by the Engineer prior to the start of milling operations. Whenever possible, the rotating axis of the milling head shall operate perpendicular to the joint being repaired. Should PCCP removal be confined to one side of a joint, the milling machine shall ~~be controlled so as to~~ not cause damage to the adjacent pavement.

[---]

Removal areas within ~~jointed reinforced concrete pavement, JRCP,~~ are not required to utilize milling to initiate partial depth repairs. Saw cutting and hand chipping may be used as described above. Any wire mesh reinforcement exposed during the removal operations shall be removed.

[---]

If a snowplowable ~~raised pavement marker~~ [Edits note: abbreviation “RPM” will be added in 101.01] is to be installed in an area of partial depth joint repair, the width of the removal area, in proximity to where the RPM is to be installed, may be increased ~~in order~~ to provide the necessary clearances as specified in 509.16.

509.09 Surface Preparation and Joint Filler Installation

The milled or hand chipped cavities shall be prepared to provide a clean, irregular surface for the development of a good bond between the joint repair concrete and the existing pavement.

Broken concrete pieces shall be removed and the cavities shall be swept clean. The surface of the cavity shall be thoroughly sandblasted and cleaned with compressed air to remove all dust and chips. Cleaning with compressed air shall be performed as close to placing the concrete as possible, but not after installing any joint filler. If joint filler material has been installed, the surface may be cleaned again by using compressed air at low pressure ~~so as to~~ not damage the in-place filler or sand below the top of any exposed dowel bar just prior to placing the grout or concrete. The air lines for sandblasting and compressed air cleaning shall be equipped with oil traps to prevent contamination of the surfaces.

[---]

509.12 Placing and Finishing Concrete

All CPM, OPCC, and RSP repair concrete *mixes* shall be placed within 15 minutes of mixing. RHCC, LMC, and LMC-VE shall be placed within five minutes of mixing. All repair concrete shall be placed such that a cold joint does not occur within the limits of ~~an individual, or intersecting, longitudinal or transverse~~ *any type of joint repair*¹ joint repair. Placement may be isolated to one side of a joint if the joint face or joint filler is properly supported. Repair along a

¹ corrected 10/27/22

transverse joint that intersects a previously repaired longitudinal joint is allowed as described in 509.08.

For CPM and OPCC ~~material~~*mixes*, the cleaned surface shall be lightly sprayed with water to wet the surface without ponding and a bonding grout shall be applied to the prepared surface. The grout shall consist of two parts Type I or Type II portland cement and one part sand mixed with sufficient water to form a slurry that can be spread evenly onto the prepared concrete surface. The grout shall be mixed mechanically and applied by brushing or scrubbing, with a stiff bristle broom, onto the prepared and wetted concrete surface. The pot life of the grout shall not extend beyond 1 h. CPM or OPCC repair material shall be placed immediately after applying the bonding grout.

For RHCC, LMC, and LMC-VE *mixes*, thoroughly soak the cleaned surface and maintain it in a wet condition for at least 2 h immediately prior to placing the repair concrete. Maintaining a wet surface shall be accomplished by covering the soaked surface with wet burlap. The burlap shall be re-wetted as necessary. A layer of white opaque polyethylene film, that is at least 4 mils thick, may be used to offset the need to rewet the burlap. Prior to placing the joint repair material, the burlap shall be removed. Any standing water in depressions, holes, or areas of concrete removal shall be blown out with compressed air or other type of blower sufficient for removal, or by ~~the use of~~*using* an approved vacuum system. The surface shall be damp at time of placing the repair concrete. Bonding grout shall not be used.

For RSP ~~material~~*mixes*, the cleaned surface shall be lightly sprayed with water to thoroughly wet the surface without ponding. RSP repair material shall be placed immediately after wetting the surface. Bonding grout shall not be used.

[---]

The final finished surface of the repair shall not vary more than 1/8 in. from the existing pavement surface as measured with a ~~straight edge~~*straightedge* over the joint. Partial depth patches that are not smooth shall be corrected by diamond grinding. Such grinding shall be completed after the concrete has gained sufficient strength for opening to traffic.

Immediately upon completion of finishing and texturing of the partial depth joint repair for all ~~material~~*mixture* types including CPM, OPCC, RHCC, LMC, LMC-VE, and RSP, grout shall be applied with a brush to the entire perimeter of the repair. Proportioning and mixing of the grout shall be the same as previously described in this section for bonding of CPM and OPCC ~~material~~*mixes*.

509.13 Curing

A resin-based liquid membrane forming compound in accordance with 912.01(e)2 shall be applied as soon as possible after the bleed water has dissipated. The compound shall be agitated in the shipping container to obtain a homogenous mixture for transfer to the job site application equipment. Application of curing compound shall be in accordance with the following:

- (a) Rate of application shall be at least ~~one gallon~~ *1 gal.* per 200 sq ft of surface curing area.

[---]

509.14 Job Control

Control of concrete for slump, air content, or relative yield, as appropriate for the mix, and strength based on modulus of rupture obtained from flexural strength beams or compressive cylinders will be determined ~~on the basis of~~ *from the* tests performed by the Engineer in accordance with 505.

The labor necessary for concrete sampling shall be furnished as required by the Engineer. Testing for slump, air content, and relative yield, as appropriate for the mix, will be on the first batch of the day and a minimum of once per every 400 cu ft thereafter. [---]

The cleaning and sealing of the joint shall be in accordance with 507.04(a) and as follows. Transverse and longitudinal joints shall be sealed with hot poured joint sealant in accordance with the sealant manufacturer's recommendations. Joints shall be sealed with joint sealing materials within 1/4 in. below the surface and shall extend beyond the limits of the patch to any existing sealant that is to remain in place. A distributor in accordance with 409.03 shall be used with an indirect-heat, double boiler kettle and mechanical agitator. The hot poured joint sealant shall be placed utilizing a "V" shaped wand tip to allow the penetration of the material into the joints.

[---]

509.16 Snowplowable Raised Pavement Markers ~~Markers~~ RPMs

Snowplowable ~~raised pavement markers~~, RPM, shall be located and installed in accordance with 808.11, except that the marker shall be installed a minimum of 2 in. from the longitudinal joint. [---]

[EDITS END HERE]

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Unneeded terminology exists in the 200 Division.

PROPOSED SOLUTION: Clean up the 200 Division by incorporating the proposed changes into the 2024 spec book.

APPLICABLE STANDARD SPECIFICATIONS: 203 and 213

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Kurt Pelz, Lana Podorvanova, Jim Reilman, Scott Trammell

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: N/A

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date:

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? N/A

Construction time? N/A

Customer satisfaction? N/A

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? N/A

Design process? Yes

Will this change provide the contractor more flexibility? N/A

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 200 – EARTHWORK

The Standard Specifications are revised as follows:

SECTION 203, BEGIN LINE 209, DELETE AND INSERT AS FOLLOWS:

[203.08(a)3 General Site]

All proposed General Sites shall have an inspection of areas impacted by the borrow or disposal operations conducted by a qualified wetland professional ~~approved by the Department~~ to determine if wetlands are present on the site. ~~A list of approved wetland professionals~~ *An Approved List of Wetland Delineators for INDOT Project Contractors* is maintained on the Department's website. The wetlands inspection shall be in accordance with the Federal Manual for Identifying and Delineating Jurisdictional Wetlands. The inspection shall also determine if isolated wetlands as defined by IDEM are present. The Contractor shall demarcate the boundary of all wetlands identified within the proposed borrow or disposal site in a method acceptable to the Engineer.

SECTION 203, BEGIN LINE 1222, DELETE AND INSERT AS FOLLOWS:

203.25 Embankment Without Stiffness Control

When aggregate is used for embankment construction and it is not possible to perform stiffness testing in accordance with ITM 508 or strength testing in accordance with ITM 509, such material shall be compacted with several passes of crawler-tread equipment or with ~~approved~~ *acceptable* vibratory equipment, or both. The equipment weight shall be at least 10 t. The materials shall be placed in lifts not to exceed 9 in. loose measurements, or as directed by the Engineer. Each lift shall be compacted with a minimum of five passes. The tread areas shall overlap enough on each trip so that the entire embankment is compacted uniformly. When the embankment reaches 24 in. below the proposed subgrade elevation, proofrolling shall be performed in accordance with 203.26. Proofrolling shall also be performed at every 5 ft of fill placed. Any defect shall be corrected as directed. Upon acceptance, a layer of geotextile in accordance with 918.02(a) Type 2B, shall be placed and the remaining embankment shall be constructed with No. 53 aggregate in accordance with 301.

SECTION 213, BEGIN LINE 37, DELETE AND INSERT AS FOLLOWS:

[213.03 Flowable Backfill Mix Design]**(a) Standard Flowable Backfill Mix**

The following two type 4, removable flowable backfill mixes and two type 5, non-removable flowable backfill mixes may be used. The final mix results may vary due to variations in cement and other materials. The Contractor shall be responsible for the performance of the flowable backfill and the mix shall meet the mix criteria in accordance with 213.04, and the minimum spread and blow counts in accordance with 213.07. *The mix design shall be submitted to the DTE a minimum of seven days prior to use and shall include the following:*

- (a) the source of all materials*
- (b) the batch weights with the aggregates at the SSD condition*
- (c) the names of all admixtures*
- (d) the admixture dosage rates and manufacturer's recommended range.*

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 200 – EARTHWORK

[213.03(b) Contractor – Designed Flowable Backfill Mix]

An FBMD in accordance with ~~these specifications~~ *this section*, which has been ~~approved~~ *accepted* for use on a previous contract, may be submitted to the DTE for ~~approval~~ *consideration for use on the current contract*. The submittal shall include copies of test results in accordance with 213.04 and 213.05.

SECTION 213, BEGIN LINE 122, DELETE AND INSERT AS FOLLOWS:

[213.05 Flowable Backfill Trial Batch]

[213.05(b) For Contractor – Designed Flowable Backfill Mixes]

If the Contractor requests to change the source of the fine aggregate identified in ~~an approved~~ *a previously accepted* FBMD, the Contractor shall submit a revised FBMD to the DTE. The Department will obtain a sample of the new fine aggregate and, if applicable, a sample of the fly ash as identified in the ~~approved~~ *previously accepted* FBMD. Dry flow will be tested in accordance with ITM 217. If the test result is within ± 2.0 s of the value shown on the ~~approved~~ *previously accepted* FBMD, the revised FBMD will be ~~approved~~ *accepted* and a new trial batch will not be required. Failure to meet the dry flow test requirement will require the Contractor to submit a new FBMD and perform a new trial batch ~~for approval~~ *of using* the proposed new fine aggregate.

APPROVED MINNESOTA

COMMENTS AND ACTION

DIVISION 200 – EARTHWORK

DISCUSSION:

This item was introduced and presented by Mr. Reilman who stated that unneeded terminology exists in the 200 Division.

Mr. Reilman proposed to clean up the 200 Division by incorporating the proposed changes into the 2024 spec book.

It was asked if using the word “acceptable” is subjective, and Mr. Reilman agreed to switch it back to “approved”.

Mr. Reilman revised his motion, which was seconded by Mr. Pelz.

There was no further discussion and this item passed as revised.

	<u>Action:</u>
Motion: Mr. Reilman	
Second: Mr. Novak	
Ayes: 9	<input type="checkbox"/> Passed as Submitted
Nays: 0	<input checked="" type="checkbox"/> Passed as Revised
FHWA Approval: Yes	<input type="checkbox"/> Withdrawn
2022 Standard Specifications Sections referenced and/or affected: DIVISION 200, begin pg. 129.	<input checked="" type="checkbox"/> 2024 Standard Specifications Revise Pay Items List
Recurring Special Provisions or Plan Details: NONE	<input type="checkbox"/> Create RSP (No. __) Effective:
Standard Drawing affected: NONE	<input type="checkbox"/> Revise RSP (No. __) Effective:
Design Manual Sections affected: NONE	<input type="checkbox"/> Standard Drawing Effective:
GIFE Sections cross-references: NONE	<input type="checkbox"/> Create RPD (No. __) Effective:
	<input type="checkbox"/> GIFE Update
	<input type="checkbox"/> Frequency Manual Update
	<input type="checkbox"/> SiteManager Update

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Unneeded terminology and awkward phrasing exists in the 300 Division.

PROPOSED SOLUTION: Clean up the Division 300 by incorporating the proposed changes into the 2024 spec book. These changes are meant to complement the conceptual proposal on the 300 section as presented by Mr. Kurt Pelz at the August 2022 Standards Committee Meeting.

APPLICABLE STANDARD SPECIFICATIONS: 304, 307, and 308

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Kurt Pelz, Lana Podorvanova, Jim Reilman, Scott Trammell

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: N/A

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 9/8/22

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? N/A

Construction time? N/A

Customer satisfaction? N/A

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? N/A

Design process? Yes

Will this change provide the contractor more flexibility? N/A

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 300 – AGGREGATE PAVEMENT AND BASES

The Standard Specifications are revised as follows:

SECTION 304, BEGIN LINE 35, DELETE AND INSERT AS FOLLOWS:

[304.04 Partial Depth and Full Depth Patching]

Each course shall be compacted ~~by approved~~ using mechanical equipment in accordance with 409.03(d).

SECTION 307, BEGIN LINE 78, DELETE AND INSERT AS FOLLOWS:

[307.05 Mix Design]

~~Additional~~ When significant in-place material changes occur, additional mix designs shall be performed ~~when the in-place material changes significantly in order to~~ establish representative mixes for the entire job.

The Contractor shall obtain all samples required to develop the mix design. One sample per lane mile of planned RBC shall be the minimum sampling frequency for mix design preparation.

~~The mix design, or~~ Mix designs, shall be submitted for approval at least five calendar days prior to the JITT and shall include *results of* all tests ~~results~~ performed.

If new materials are added, a new mix design, including the ~~revised~~ updated test results, shall be submitted at least one day prior to implementation.

SECTION 307, BEGIN LINE 222, DELETE AND INSERT AS FOLLOWS:

[307.10 Stabilization]

The cement shall be incorporated into the pulverized material at the initial rate ~~determined by~~ shown in the approved mix design ~~and approved by the Engineer~~. Sampling and mix design may determine different levels of cement at various portions of the project.

SECTION 308, BEGIN LINE 83, DELETE AND INSERT AS FOLLOWS:

[308.05 Mix Design]

~~The mix design, or~~ Mix designs, shall be submitted for approval at least five calendar days prior to the JITT and shall include *results of* all tests ~~results~~ performed. If new materials are added, a new mix design, including the ~~revised~~ updated test results, shall be submitted at least one day prior to implementation.

SECTION 308, BEGIN LINE 221, DELETE AND INSERT AS FOLLOWS:

[308.10 Injection]

The asphalt emulsion shall be incorporated into the pulverized material at the initial rate ~~determined by~~ shown in the approved mix design ~~and approved by the Engineer~~. Sampling and mix design may determine different levels of asphalt emulsion at various portions of the project.

COMMENTS AND ACTION

DIVISION 300 – AGGREGATE PAVEMENT AND BASES

DISCUSSION:

Mr. Reilman introduced and presented this item stating that unneeded terminology and awkward phrasing exists in the 300 Division.

Mr. Reilman proposed to clean up the Division 300 by incorporating the proposed changes into the 2024 spec book. These changes are meant to complement the conceptual proposal on the 300 section as presented by Mr. Kurt Pelz at the August 2022 Standards Committee Meeting.

Mr. Beeson mentioned that the GIFE may need to be updated to reflect terminology changes made to the Standard Specifications.

There was no further discussion and this item passed as submitted.

	<u>Action:</u>
Motion: Mr. Reilman Second: Mr. Novak Ayes: 9 Nays: 0 FHWA Approval: Yes	<input checked="" type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn
2022 Standard Specifications Sections referenced and/or affected: DIVISION 300, begin pg. 261.	<input checked="" type="checkbox"/> 2024 Standard Specifications <input type="checkbox"/> Revise Pay Items List
Recurring Special Provisions or Plan Details: NONE	<input type="checkbox"/> Create RSP (No. __) Effective:
Standard Drawing affected: NONE	<input type="checkbox"/> Revise RSP (No. __) Effective:
Design Manual Sections affected: NONE	<input type="checkbox"/> Standard Drawing Effective:
GIFE Sections cross-references: NONE	<input type="checkbox"/> Create RPD (No. __) Effective:
	<input type="checkbox"/> GIFE Update <input type="checkbox"/> Frequency Manual Update <input type="checkbox"/> SiteManager Update

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Unneeded terminology and awkward phrasing exists in the Division 400.

PROPOSED SOLUTION: Clean up Division 400 by incorporating the proposed changes into the 2024 spec book.

APPLICABLE STANDARD SPECIFICATIONS: 401, 402, 410, 411, 414, 416, and 417

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Kurt Pelz, Lana Podorvanova, Jim Reilman, Scott Trammell

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: N/A

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 9/8/22

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? N/A

Construction time? N/A

Customer satisfaction? N/A

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? N/A

Design process? Yes

Will this change provide the contractor more flexibility? N/A

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 400 – ASPHALT PAVEMENTS

The Standard Specifications are revised as follows:

SECTION 401, BEGIN LINE 36, DELETE AND INSERT AS FOLLOWS:

401.04 Design Mix Formula

A ~~design mix formula, DMF,~~ shall be prepared in accordance with 401.05 and submitted in a format acceptable to the Engineer one week prior to use. The DMF shall be based on the ESAL category identified in the pay item and shall state the mixture designation and maximum particle size in the mixture. No mixture ~~will~~shall be accepted ~~for used~~ until the DMF has been assigned a mixture number by the ~~Engineer~~DTE.

SECTION 401, BEGIN LINE 366, DELETE AS FOLLOWS:

401.11 Preparation of Surfaces to be Overlaid

The subgrade, *or subbase*, shall be shaped to the required grade and sections, free from all ruts, corrugations, or other irregularities, and uniformly compacted and approved in accordance with 207 and 302. Milling of an existing pavement surface shall be in accordance with 306. Surfaces on which a mixture is placed shall be free from objectionable or foreign materials at the time of placement.

SECTION 402, BEGIN LINE 52, DELETE AND INSERT AS FOLLOWS:

[402.04 Design Mix Formula]

No mixture ~~will~~shall be accepted ~~for used~~ until the DMF has been assigned a mixture number by the ~~Engineer~~DTE.

SECTION 402, BEGIN LINE 140, DELETE AS FOLLOWS:

402.11 Preparation of Surfaces to be Overlaid

The subgrade, *or subbase*, shall be shaped to the required grade and sections, free from all ruts, corrugations, or other irregularities, and uniformly compacted and approved in accordance with 207 and 302. Milling of an existing surface shall be in accordance with 306. Surfaces on which a mixture is placed shall be free from objectionable or foreign materials at the time of placement.

SECTION 410, BEGIN LINE 30, DELETE AND INSERT AS FOLLOWS:

410.04 Design Mix Formula

A ~~design mix formula, DMF,~~ shall be prepared in accordance with 410.05 and submitted in a format acceptable to the Engineer one week prior to use. The DMF shall state the maximum particle size in the mixture. The DMF shall state the calibration factor, test temperature and absorption factors to be used for the determination of binder content using the ignition oven in accordance with ITM 586, the binder content by extraction in accordance with ITM 571, ΔP_b , determined in accordance with ITM 591, the aggregate degradation loss value in accordance with ITM 220 and a Mixture Adjustment Factor, MAF. The DMF shall state the source, type dosage rate of any stabilizing additives. The DMF will be based on the ESAL and mixture designation. No mixture ~~will~~shall be accepted ~~for used~~ until the DMF has been assigned a mixture number by the ~~Engineer~~DTE.

SECTION 410, BEGIN LINE 98, DELETE AND INSERT AS FOLLOWS:

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 400 – ASPHALT PAVEMENTS

[410.05 SMA Mix Design]

The specific gravity of SF and the Gsb of the aggregate blend containing SF may be adjusted once per contract upon notification by the SF source and approval by the ~~District Testing Engineer~~ DTE. A new DMF is not required for this adjustment.

SECTION 410, BEGIN LINE 130, DELETE AS FOLLOWS:

410.08 Job Mix Formula

A ~~job mix formula, JMF~~, shall be developed by a certified HMA producer in accordance with ITM 583. A JMF used for SMA mixture in the current calendar year will be allowed.

SECTION 410, BEGIN LINE 454, DELETE AND INSERT AS FOLLOWS:

410.20 Appeals

If the QC test results do not agree with the acceptance test results, a request, along with the QC test results, may be made in writing for additional testing. Additional testing may be requested for one or more of the following tests: binder content, gradation, or MSG of the mixture samples, and bulk specific gravity of the density cores. ~~The appeal request shall be submitted within seven calendar days of receipt of the Department's written results for that subplot.~~ The request for the appeal for MSG, BSG of the density cores or binder content and gradation shall be submitted within seven calendar days of receipt of the Department's written results for that subplot. The subplot and specific tests shall be specified at the time of the appeal request. Only one appeal request per subplot is allowed. ~~Upon approval of the appeal~~ *Once the appeal request has been granted*, the Engineer will perform additional testing.

SECTION 411, BEGIN LINE 72, DELETE AND INSERT AS FOLLOWS:

411.05 Pre-Paving Coordination

A pre-paving meeting will be held on-site prior to beginning work. The Contractor shall furnish as a minimum:

- (a) the Contractor's detailed work schedule
- (b) traffic control plan
- (c) calibration of equipment
- (d) ~~design mix formula~~ DMF/~~job mix formula~~ JMF
- (e) inspection and evaluation of the condition and adequacy of equipment, including units for transport of materials
- (f) ~~Quality Control Plan~~ QCP in accordance with ITM 803.

SECTION 414, BEGIN LINE 39, DELETE AND INSERT AS FOLLOWS:

414.03 Design Mix Formula

The ~~design mix formula, DMF~~, shall be determined for each mixture prepared by a

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 400 – ASPHALT PAVEMENTS

Qualified Mix Design Laboratory selected from the Department's list of Qualified Mix Design Laboratories. The Contractor shall submit a DMF for each mixture to the Engineer one week prior to use. The DMF shall state the maximum particle size in the mixture, the mixture gradation, the total aggregate bulk specific gravity, the maximum and bulk specific gravity of the UBWC mixture and the application rate for any anti-stripping additives. No mixture ~~will~~ *shall* be ~~accepted~~ *used* until the submitted DMF ~~is approved~~ *has been reviewed by the DTE*.

SECTION 414, BEGIN LINE 149, DELETE AND INSERT AS FOLLOWS:

414.10 Pre-Paving Meeting

A pre-paving meeting between the Engineer and Contractor will be held on-site prior to beginning work. The following shall be reviewed:

- (a) work schedule
- (b) traffic control plan
- (c) equipment calibrations and adjustments
- (d) inspection and evaluation of the condition and adequacy of equipment, including units for transport of materials
- (e) ~~job mix formula~~ *JMF*
- (f) Contractor's proposed emulsion and mix application rates
- (g) QCP in accordance with ITM 803
- (h) Contractor's authorized representative.

SECTION 416, BEGIN LINE 76, DELETE AND INSERT AS FOLLOWS:

~~The Contractor shall provide a~~ *The mix design, or designs, shall be submitted to the Engineer for approval at least five calendar days prior to the JITT. The mix design and shall include results of all tests results performed. If new materials are added, a new mix design, including the updated test results, shall be submitted at least one day prior to implementation.*

SECTION 417, BEGIN LINE 77, DELETE AND INSERT AS FOLLOWS:

~~The Contractor shall provide a~~ *The mix design, or designs, shall be submitted to the Engineer for approval at least five calendar days prior to the JITT. The mix design and shall include results of all tests results performed. If new materials are added, a new mix design, including the updated test results, shall be submitted at least one day prior to implementation.*

COMMENTS AND ACTION

DIVISION 400 – ASPHALT PAVEMENTS

DISCUSSION:

This item was introduced and presented by Mr. Reilman who stated that unneeded terminology and awkward phrasing exists in the Division 400.

Mr. Reilman proposed to clean up Division 400 by incorporating the proposed changes into the 2024 spec book.

Ms. Mouser asked if we need to change “Engineer” to DTE, and if that could create any confusion. Mr. Reilman replied that in this case, we are being more specific for clarification.

Further discussion ensued regarding removing the word “approved” when the language includes “in accordance with 207”. Mr. Koch added that a little redundancy would be a good thing here. Mr. Reilman agreed to reverse that revision and leave the word “approved” in there, and also add subbase in accordance with 302, as shown highlighted above.

Mr. Reilman revised his motion which was seconded by Mr. Novak.

There was no further discussion and this item passed as revised.

	<u>Action:</u>	
Motion: Mr. Reilman	—	Passed as Submitted
Second: Mr. Novak	X	Passed as Revised
Ayes: 9	—	Withdrawn
Nays: 0		
FHWA Approval: Yes		
2022 Standard Specifications Sections referenced and/or affected: Division 400, begin pg. 299.	X	2024 Standard Specifications
	—	Revise Pay Items List
	—	Create RSP (No. __)
Recurring Special Provisions or Plan Details: 401-R-736 QC/QA HMA PAVEMENT 402-R-737 HMA PAVEMENT	—	Effective:
	—	Revise RSP (No. __)
	—	Effective:
Standard Drawing affected: NONE	—	Standard Drawing
	—	Effective:
Design Manual Sections affected: NONE	—	Create RPD (No. __)
	—	Effective:
GIFE Sections cross-references: NONE	—	GIFE Update
	—	Frequency Manual Update
	—	SiteManager Update

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Unneeded terminology and awkward phrasing exists in the Division 600.

PROPOSED SOLUTION: Clean up Division 600 by incorporating the proposed changes into the 2024 spec book.

APPLICABLE STANDARD SPECIFICATIONS: 605, 609, and 622

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Kurt Pelz, Lana Podorvanova, Jim Reilman, Scott Trammell

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: N/A

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 9/8/22

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? N/A

Construction time? N/A

Customer satisfaction? N/A

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? N/A

Design process? Yes

Will this change provide the contractor more flexibility? N/A

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 600 – INCIDENTAL CONSTRUCTION

The Standard Specifications are revised as follows:

SECTION 605, BEGIN LINE 188, DELETE AND INSERT AS FOLLOWS:

[605.07 HMA Curbing]**(d) Placing**

HMA curbing shall be constructed by use of a self-propelled automatic curber, curb machine or paver with curbing attachments. The curbing shall be in accordance with the section shown on the plans. The automatic curber or machine shall meet the following requirements and ~~shall be~~ *subject to approved* prior to use.

SECTION 609, BEGIN LINE 88, DELETE AND INSERT AS FOLLOWS:

609.10 Curing

RCBA shall be wet cured in accordance with 702 or shall have liquid membrane forming curing compound applied *and maintained in accordance with 504.04(a)* to exposed surfaces within 30 minutes after the finishing operations have been completed. The edges of the RCBA shall be cured immediately upon removal of the forms. The edge shall be covered with curing materials equal to the material used on the surface or banked with soil 12 in. wide or greater.

When conditions arise which prevent timely application of curing materials the surfaces shall be kept wet with a fine spray of water. The fine spray of water shall continue until application of curing materials is resumed.

~~Liquid membrane forming curing compound shall be applied in a continuous uniform film at a rate not less than 1 gal./150 sq ft of concrete surface and shall be applied to provide a uniform, solid, white opaque coverage on all surfaces, similar to a white sheet of paper. Additional applications, if needed, shall follow the previous application within 30 minutes. The curing compound may be warmed in a water bath during cold weather at a temperature not exceeding 100°F. Thinning with solvents will not be allowed. Non-uniform film rates will result in the discontinuance of that application method.~~

~~A new coat of curing compound shall be applied to areas damaged by rain or other means during the curing period. The recoating shall be applied as soon as possible and at a rate equal to that specified for the original coat.~~

SECTION 622, BEGIN LINE 166, DELETE AND INSERT AS FOLLOWS:

[622.08 Planting, Backfilling, and Watering]

In addition to the water applied at the time of planting, unless excessive moisture prevails, a minimum of two supplemental waterings shall be applied between May 1 and June 15, and one every 14 days between June 15 and September 15. Sufficient water shall be applied to individual plants to saturate the backfill and the mulch area. Plants in beds shall receive water equivalent to the quantity used for individual plants. Liquid fertilizer, in accordance with 622.09, may be applied with the supplemental watering and the method of application ~~shall be~~ *subject to approved*. Lance watering will not be allowed.

COMMENTS AND ACTION

DIVISION 600 – INCIDENTAL CONSTRUCTION

DISCUSSION:

This item was introduced and presented by Mr. Reilman who stated that unneeded terminology and awkward phrasing exists in the Division 600.

Mr. Reilman proposed to clean up Division 600 by incorporating the proposed changes into the 2024 spec book.

There was no further discussion and this item passed as submitted.

<p>Motion: Mr. Reilman Second: Mr. Novak Ayes: 9 Nays: 0 FHWA Approval: Yes</p>	<p><u>Action:</u></p> <p><input checked="" type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn</p>
<p>Sections referenced and/or affected: 2022 Standard Specifications: Division 600, begin pg. 487.</p> <p>Recurring Special Provisions or Plan Details: 609-B-311 RCBA SLAB OPTION FOR USE WITH SHORT TERM CLOSURES</p> <p>Standard Drawing affected: NONE</p> <p>Design Manual Sections affected: NONE</p> <p>GIFE Section: NONE</p>	<p><input checked="" type="checkbox"/> 2024 Standard Specifications <input type="checkbox"/> Revise Pay Items List</p> <p><input type="checkbox"/> Create RSP (No. __) Effective:</p> <p><input type="checkbox"/> Revise RSP (No. __) Effective:</p> <p><input type="checkbox"/> Standard Drawing Effective:</p> <p><input type="checkbox"/> Create RPD (No. __) Effective:</p> <p><input type="checkbox"/> GIFE Update <input type="checkbox"/> Frequency Manual Update <input type="checkbox"/> SiteManager Update</p>

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Unneeded terminology and awkward phrasing exists in Division 800.

PROPOSED SOLUTION: Clean up Division 800 section by incorporating the proposed changes into the 2024 spec book.

APPLICABLE STANDARD SPECIFICATIONS: 801, 805, and 808

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Kurt Pelz, Lana Podorvanova, Jim Reilman, Scott Trammell

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: N/A

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 9/8/22

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? N/A

Construction time? N/A

Customer satisfaction? N/A

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? N/A

Design process? Yes

Will this change provide the contractor more flexibility? N/A

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 800 – TRAFFIC CONTROL DEVICES AND LIGHTING

The Standard Specifications are revised as follows:

SECTION 801, BEGIN LINE 774, DELETE AND INSERT AS FOLLOWS:

[801.15(d) Temporary Traffic Signals]

The traffic signal equipment shall be as specified, but may be either new or used. Used equipment shall be in satisfactory working condition and will be *subject to approved* prior to use.

Two signal heads shall be displayed for each approach. Signal cable may be extended across bridges through conduit which shall be attached to the underside of the coping. Type and spacing of clamps ~~shall~~ *will be subject to approved* prior to installation.

SECTION 805, BEGIN LINE 259, DELETE AND INSERT AS FOLLOWS:

[805.07 Wire and Cable Installations]

The tagging material and fastening ~~shall~~ *will be subject to approved* prior to proceeding with this work. The color coded wires shall be connected properly. The white wire shall be the common or ground. Wire used for all identical indications of any individual phase shall be color coded and, where possible, shall use red wire to connect red lenses, orange wire to connect yellow lenses, and green wire to connect green lenses. Signal heads shall be assembled and wired before being installed. The testing of the loops shall be documented in the Loop Testing Table provided by the State.

SECTION 808, BEGIN LINE 45, DELETE AND INSERT AS FOLLOWS:

[808.03 General Requirements]

Control points required as a guide for pavement traffic markings shall be spotted with paint for the full length of the road to be marked. Control points along tangent sections shall be spaced at a maximum interval of 100 ft. Control points along curve sections shall be spaced so as to ensure the accurate location of the pavement traffic markings. The location of control points ~~shall~~ *will be subject to approved* prior to the pavement traffic marking application.

SECTION 808, BEGIN LINE 545, DELETE AND INSERT AS FOLLOWS:

[808.11 Snowplowable Raised Pavement Markings]

(b) Location

Marker locations shall be accurately laid out and *will be subject to approved* prior to the installation operation. Markers shall not be located on surfaces that show visible evidence of cracking, checking, spalling or failure of underlying materials. Markers shall not be located within the intersection of a public road. Any marker location, which falls on any of the restricted areas, shall be moved a longitudinal distance not to exceed 10% of the required marker spacing. If this adjusted location still falls within a restricted area, then that marker location shall be deleted. Marker locations shall be as shown on the plans.

COMMENTS AND ACTION

DIVISION 800 – TRAFFIC CONTROL DEVICES AND LIGHTING

DISCUSSION:

This item was introduced and presented by Mr. Reilman who stated that unneeded terminology and awkward phrasing exists in Division 800.

Mr. Reilman proposed to clean up Division 800 section by incorporating the proposed changes into the 2024 spec book.

There was no further discussion and this item passed as submitted.

<p>Motion: Mr. Reilman Second: Mr. Bruno Ayes: 9 Nays: 0 FHWA Approval: Yes</p>	<p><u>Action:</u> <input checked="" type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn</p>
<p>2022 Standard Specifications Sections referenced and/or affected: DIVISION 800, begin pg. 863.</p> <p>Recurring Special Provisions or Plan Details: NONE</p> <p>Standard Drawing affected: NONE</p> <p>Design Manual Sections affected: NONE</p> <p>GIFE Sections cross-references: NONE</p>	<p><input checked="" type="checkbox"/> 2024 Standard Specifications Revise Pay Items List</p> <p><input type="checkbox"/> Create RSP (No. __) Effective:</p> <p><input type="checkbox"/> Revise RSP (No. __) Effective:</p> <p><input type="checkbox"/> Standard Drawing Effective:</p> <p><input type="checkbox"/> Create RPD (No. __) Effective:</p> <p><input type="checkbox"/> GIFE Update <input type="checkbox"/> Frequency Manual Update <input type="checkbox"/> SiteManager Update</p>

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: With the somewhat recent trend of portions of road construction activities being active year-round and therefore some HMA plants opening or remaining open during winter months, a cold mix asphalt specification is no longer needed. The specification has become outdated and no longer serves a purpose for the Department.

PROPOSED SOLUTION: Delete the 403 cold mix asphalt specification section and associated references throughout other spec book sections. Since 2014, a 403 pay item has appeared once in a contract, and it's questionable whether it was the correct item.

APPLICABLE STANDARD SPECIFICATIONS: 101.01, 306.07, 306.08, 306.09, 403, 409.02, 414.07, and 417.08.

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: make the following pay items obsolete: 403-05499, 409-05500, 403-05501, 403-05502, 403-05503, 403-05504, 403-05505, 403-05506, and 403-05507.

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Nathan Awwad, Matt Beeson, Jim Reilman

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: N/A

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 9/14/22

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? N/A
Construction time? N/A
Customer satisfaction? N/A
Congestion/travel time? N/A
Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

For motorists? N/A
For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes
Asset preservation? N/A
Design process? Yes

Will this change provide the contractor more flexibility? N/A

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? N/A

Is this proposal needed for compliance with:

Federal or State regulations? No
AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

There was hesitancy on removing this section in the late 1990's when a significant review of the 400 specification section was done. The hesitancy was due to a chance that a local agency might use CMA. However the 400 subcommittee did not make any effort to contact or interview any local agency to determine if CMA was used. While other 400 sections were heavily edited, this section was marginally edited and left in the book.

REVISION TO 2022 STANDARD SPECIFICATIONS

101.01 Abbreviations	SECTION 403 – CMA PAVEMENT
306.07 Asphalt or PCCP Milling to a Specified Average Depth	409.02 Mixing Plant
306.08 Asphalt Overlay Removal	414.07 Equipment
306.09 Transition Milling	417.08 Equipment

The Standard Specifications are revised as follows:

SECTION 101, BEGIN LINE 46, DELETE AS FOLLOWS:

~~CMA — cold mix asphalt~~

SECTION 306, BEGIN LINE 200, DELETE AS FOLLOWS:

The transverse vertical cut face shall be transitioned by HMA, ~~CMA~~ or prefabricated materials at a rate of 24:1 or as directed.

SECTION 306, BEGIN LINE 216, DELETE AS FOLLOWS:

The transverse vertical cut face shall be transitioned by HMA, ~~CMA~~ or prefabricated materials at a rate of 24:1 or as directed.

306.09 Transition Milling

Transition milling shall consist of cutting a wedge at the beginning and ending of projects, and paving exceptions. The existing pavement shall be cut to provide a nearly vertical face of 1 1/2 in. or the minimum finished thickness of a course in accordance with 401.14, whichever is greater, for the termini of each overlay lift of base, intermediate, and surface. The existing pavement shall be milled at a rate of 720:1 or as directed to achieve the specified cut where the pavement transition overlay lifts differ from cut depth. The transverse vertical cut face shall be transitioned by HMA, ~~CMA~~ or prefabricated materials at a rate of 24:1 or as directed.

SECTION 403, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 403 – CMA PAVEMENT BLANK

403.01 Description

~~This work shall consist of the construction of one or more courses of CMA base, intermediate, or surface for immediate use or stockpiled in accordance with 105.03.~~

MATERIALS

403.02 Materials

Materials shall be in accordance with the following:

Asphalt Materials

For Immediate Use,

Asphalt Emulsion AE-150, AE-90 902.01(b)

For Stockpiling,

Asphalt Emulsion AE-150 902.01(b)

Coarse Aggregates 904.03

Base, Class D or Higher

REVISION TO 2022 STANDARD SPECIFICATIONS

101.01 Abbreviations	SECTION 403 – CMA PAVEMENT
306.07 Asphalt or PCCP Milling to a Specified Average Depth	409.02 Mixing Plant
306.08 Asphalt Overlay Removal	414.07 Equipment
306.09 Transition Milling	417.08 Equipment

~~Intermediate, Class C or Higher
Surface, Class B or Higher~~

~~Fine Aggregates904.02~~

~~A type D certification in accordance with 916 and the Frequency Manual shall be provided for the CMA pavement.~~

CONSTRUCTION REQUIREMENTS

~~403.03 Weather Limitations~~

~~CMA pavements shall not be placed on a wet surface, when the ambient temperature is below 40°F, or when other unsuitable conditions exist, unless approved by the Engineer.~~

~~403.04 Equipment~~

~~Mixing plant, hauling trucks, pavers, and rollers shall be in accordance with 409.~~

~~403.05 Preparation of Mixtures~~

~~The size of the aggregate and the grade of asphalt materials shall be as specified. The gradations and percent of asphalt shall be as follows.~~

Composition Limits for CMA Mixtures						
Sieve Size	Total % of Aggregates Passing Sieves Based on Total Weight of Aggregates					
	Size 2	Size 5	Size 8	Size 9	Size 11	Size 5D
2 1/2 in. (63.0 mm)	100					
2 in. (50.0 mm)	95–100					
1 1/2 in. (37.5 mm)		100				100
1 in. (25.0 mm)	0–25	85–100	100			80–99
3/4 in. (19.0 mm)	0–10	60–90	75–100	100		68–90
1/2 in. (12.5 mm)	0–7	30–65	40–75	65–90	100	54–76
3/8 in. (9.5 mm)		15–50	20–55	30–65	75–100	45–67
No. 4 (4.75 mm)		0–20	0–20	0–20	10–35	30–50
No. 8 (2.36 mm)		0–15	0–15	0–15	0–15	20–45
No. 30 (600 µm)						7–28
No. 200 (75 µm)	0–5	0–5	0–5	0–6	0–6	0–6
Minimum % Crushed	95	95	95	95	95	95
% of Asphalt*	2.0–3.5	2.5–4.0	3.0–4.5	3.5–5.0	4.0–6.0	3.5–5.0

* Percent of asphalt shall be calculated on the basis of the total weight of the mixture, exclusive of water or solvent. When slag is used, the asphalt content will be adjusted to compensate for the specific gravity and surface area.

REVISION TO 2022 STANDARD SPECIFICATIONS

101.01 Abbreviations	SECTION 403 – CMA PAVEMENT
306.07 Asphalt or PCCP Milling to a Specified Average Depth	409.02 Mixing Plant
306.08 Asphalt Overlay Removal	414.07 Equipment
306.09 Transition Milling	417.08 Equipment

~~The moisture condition of the aggregate shall be such that the aggregate is uniformly coated and satisfactorily retains the required amount of asphalt during the stockpiling, hauling, and spreading operations. Mixtures shall not be produced at temperatures exceeding 180°F.~~

~~403.06 Preparation of Subgrade or Base~~

~~Mixtures for CMA base may be placed on an earth subgrade, on an existing pavement surface to be used as a base, or on a previously prepared base or subbase as specified. If such material is to be laid on a newly prepared subgrade, then all applicable requirements of 207 shall apply.~~

~~403.07 Spreading Mixture~~

~~The CMA mixture shall be spread in accordance with 402.13.~~

~~A safety edge shall be constructed at locations where an intermediate mixture or a surface mixture is constructed adjacent to an aggregate or earth shoulder.~~

~~403.08 Curing~~

~~All CMA mixtures shall be allowed to cure sufficiently to prevent undue distortions under the roller wheels.~~

~~When a CMA mixture is allowed to cure under traffic, the surface shall be maintained and all damaged areas shall be satisfactorily repaired.~~

~~403.09 Compaction~~

~~Compaction shall be in accordance with 402.15. Satisfactory means to confine the mixture within the required limits shall be in place during the compaction operation.~~

~~403.10 Surface Tolerances~~

~~The smoothness requirements for CMA pavements shall be in accordance with 402.18.~~

~~403.11 Method of Measurement~~

~~CMA pavement will be measured by the ton, of the type and size specified, in accordance with 109.01(b).~~

~~403.12 Basis of Payment~~

~~The accepted quantities of CMA pavement will be paid for at the contract unit price per ton, of the type and size specified, for the mixture.~~

~~Payment will be made under:~~

Pay Item	Pay Unit Symbol
---------------------	----------------------------

REVISION TO 2022 STANDARD SPECIFICATIONS

101.01 Abbreviations	SECTION 403 – CMA PAVEMENT
306.07 Asphalt or PCCP Milling to a Specified Average Depth	409.02 Mixing Plant
306.08 Asphalt Overlay Removal	414.07 Equipment
306.09 Transition Milling	417.08 Equipment

CMA Base _____ TON
 -size

CMA Intermediate _____ TON
 -size

CMA Surface _____ TON
 -size

~~The cost of repairing damaged areas of mixture allowed to cure under traffic shall be included in the cost of the pay items in this section.~~

SECTION 409, BEGIN LINE 7, DELETE AND INSERT AS FOLLOWS:

409.02 Mixing Plant

The mixing plant *shall be certified in accordance with ITM 583* and shall be capable of producing a uniform mixture.

~~(a) Certified HMA Plant~~

~~A certified HMA plant shall be in accordance with ITM 583.~~

~~(b) CMA Mixing Plant~~

~~The mixing plant shall be of sufficient capacity and coordination to adequately handle the proposed CMA construction. The mixing unit shall be a twin shaft pugmill or other approved mixer, including the drum type capable of producing a consistent uniform mixture. The outlet of the mixer shall be such that it prevents segregation of the material when discharged.~~

~~A certified HMA plant in accordance with 409.02(a) may be utilized as a CMA mixing plant.~~

SECTION 414, BEGIN LINE 120, DELETE AS FOLLOWS:

The equipment shall be in accordance with 409.01, 409.02(a), 409.03(b) and 409.03(d)1 except as follows:

SECTION 417, BEGIN LINE 148, DELETE AS FOLLOWS:

(d) Mixing and Proportioning Equipment

The equipment shall be capable of processing sized RAP, asphalt emulsion, water and any additives stipulated in the mix design to a homogenous and uniformly coated CCPR mixture. *The CCPR mixing unit shall be a twin shaft pugmill or other approved mixer, including the drum type capable of producing a consistent uniform mixture. The outlet of the mixer shall be such that it prevents segregation of the material when discharged.* The equipment shall ~~be in accordance with 409.02(b)~~ and display automatic digital readings ~~shall be displayed~~ for the flow rate of both the RAP and asphalt emulsion in appropriate units of weight and time.

COMMENTS AND ACTION

101.01 Abbreviations	SECTION 403 – CMA PAVEMENT
306.07 Asphalt or PCCP Milling to a Specified Average Depth	409.02 Mixing Plant
306.08 Asphalt Overlay Removal	414.07 Equipment
306.09 Transition Milling	417.08 Equipment

DISCUSSION:

This item was introduced and presented by Mr. Reilman who explained that with the somewhat recent trend of portions of road construction activities being active year-round, and therefore some HMA plants opening or remaining open during winter months, a cold mix asphalt specification is no longer needed. The specification has become outdated and no longer serves a purpose for the Department.

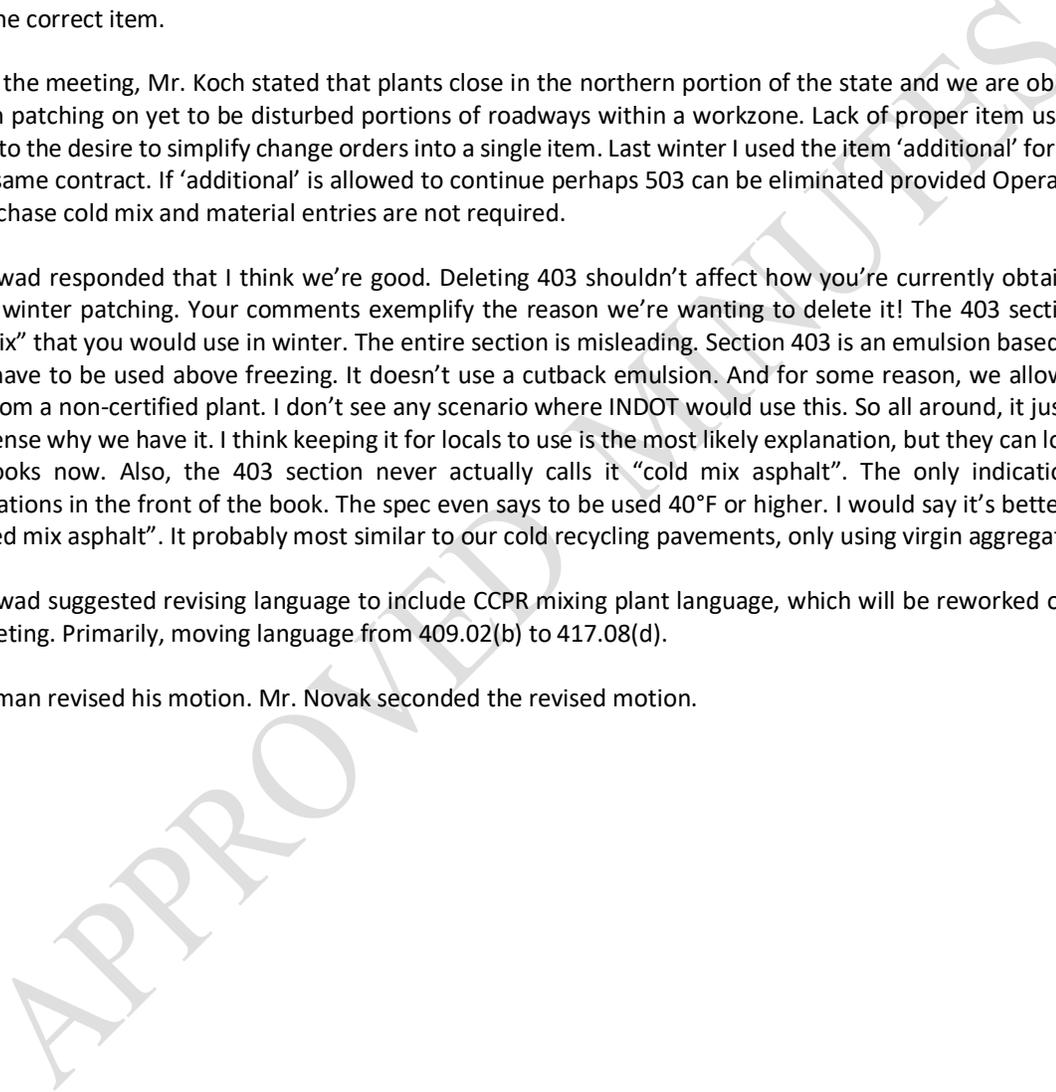
Mr. Reilman proposed to delete the 403 cold mix asphalt specification section and associated references throughout other spec book sections. Since 2014, a 403 pay item has appeared once in a contract, and it's questionable whether it was the correct item.

Prior to the meeting, Mr. Koch stated that plants close in the northern portion of the state and we are obligated to perform patching on yet to be disturbed portions of roadways within a workzone. Lack of proper item use may be related to the desire to simplify change orders into a single item. Last winter I used the item 'additional' for two CO's on the same contract. If 'additional' is allowed to continue perhaps 503 can be eliminated provided Operations can still purchase cold mix and material entries are not required.

Mr. Awwad responded that I think we're good. Deleting 403 shouldn't affect how you're currently obtaining cold mix for winter patching. Your comments exemplify the reason we're wanting to delete it! The 403 section is not "cold mix" that you would use in winter. The entire section is misleading. Section 403 is an emulsion based mix that would have to be used above freezing. It doesn't use a cutback emulsion. And for some reason, we allow CMA to come from a non-certified plant. I don't see any scenario where INDOT would use this. So all around, it just doesn't make sense why we have it. I think keeping it for locals to use is the most likely explanation, but they can look at old spec books now. Also, the 403 section never actually calls it "cold mix asphalt". The only indication is the abbreviations in the front of the book. The spec even says to be used 40°F or higher. I would say it's better defined as "cured mix asphalt". It probably most similar to our cold recycling pavements, only using virgin aggregates.

Mr. Awwad suggested revising language to include CCPR mixing plant language, which will be reworked outside of this meeting. Primarily, moving language from 409.02(b) to 417.08(d).

Mr. Reiman revised his motion. Mr. Novak seconded the revised motion.



COMMENTS AND ACTION

101.01 Abbreviations
 306.07 Asphalt or PCCP Milling to a Specified Average Depth
 306.08 Asphalt Overlay Removal
 306.09 Transition Milling

SECTION 403 – CMA PAVEMENT
 409.02 Mixing Plant
 414.07 Equipment
 417.08 Equipment

[continued]

	Action:	
Motion: Mr. Reilman Second: Mr. Novak Ayes: 9 Nays: 0 FHWA Approval: Yes	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	Passed as Submitted Passed as Revised Withdrawn
2022 Standard Specifications Sections referenced and/or affected: 101.01 pg. 2; 306.07 pg. 277; 306.08 and 306.09 pg. 278; 409.02 pg. 348; 414.07 pg. 377, and 417.08 pg. 397.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	2024 Standard Specifications Revise Pay Items List Create RSP (No. __) Effective:
Recurring Special Provisions or Plan Details: NONE	<input type="checkbox"/>	Revise RSP (No. __) Effective:
Standard Drawing affected: NONE	<input type="checkbox"/>	Standard Drawing Effective:
Design Manual Sections affected: NONE	<input type="checkbox"/>	Create RPD (No. __) Effective:
GIFE Sections cross-references: NONE	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	GIFE Update Frequency Manual Update SiteManager Update

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Unneeded terminology and awkward phrasing exist, and updates are needed in the 900 DIVISION. Cutback asphalt is not used in contracts, but rather by maintenance only. Additional test methods exist for testing asphalt emulsion viscosity.

PROPOSED SOLUTION: Clean up the 900 DIVISION by incorporating the proposed changes into the 2024 spec book. Add any necessary language to recurring INDOT Maintenance QPAs and reference AASHTO M 82 and ASTM D2026. Delete cutback asphalt from standard specifications. Add test method for viscosity (rotational paddle, T 382) and incorporate clean-up type of edits to the asphalt emulsion table in 902.01(b). {Note: this same asphalt emulsion table appeared as part of item 7 on the 12/17/21 agenda. It was approved for insertion into the 2024 spec book (no RSP). If this version of the table is approved, this version should be the version that is incorporated into the 2024 spec book.}

APPLICABLE STANDARD SPECIFICATIONS: 901, 902, 906, 907, 909, 914, 915, 917, 925 and 926

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: None

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Nathan Awwad, Matt Beeson, Kelly Cummins, Jim Reilman

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: N/A

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 9/19/22

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? N/A
Construction time? N/A
Customer satisfaction? N/A
Congestion/travel time? N/A
Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

For motorists? N/A
For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes
Asset preservation? N/A
Design process? Yes

Will this change provide the contractor more flexibility? N/A

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No
AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO 2022 STANDARD SPECIFICATIONS

901.01 Hydraulic Cement	909.01 General Requirements
901.02 Fly Ash Used as a Pozzolan	909.02 For Metal
901.03 Slag Cement Used as a Pozzolan	909.03 Structural Steel Coating System
901.04 Silica Fume Used as a Pozzolanic Mineral Admixture	914.02 Temporary Seeds
902.01 Asphalt	914.09 Miscellaneous Material
902.02 Sampling and Testing Asphalt Materials	915.04 Elastomeric Bearings
906.02 Joint Sealing Materials	915.05 Bearing Assemblies with
906.07 Bridge Expansion Joints	Polytetrafluoroethylene, PTFE, Sliding Surfaces
907.03 Reinforced Concrete Horizontal Elliptical Pipe	917.03 Source Approval Requirements
907.04 Precast Concrete Manholes, Inlets, and Catch Basins	917.04 Removal from Certified Producer Status
907.10 Drain Tile	925.02 Model Approval
907.16 Thermoplastic Pipe Requirements	926.02 Delineators

The Standard Specifications are revised as follows:

SECTION 901, BEGIN LINE 100, DELETE AND INSERT AS FOLLOWS:

c. Requirements for Foreign Source Qualification

Foreign cement manufacturers or their domestic distributors requesting to be qualified to supply cement shall provide the following:

- (1) For the initial qualifications, the manufacturer and distributor shall provide to the Department’s Division of Materials and Tests a QCP in accordance with the applicable requirements of ITM 806. The QCP shall also include the location and type of samples taken, and a summary of complete test results from the proposed cement source. A current ~~Material Safety Data Sheet~~ SDS shall be submitted as an integral part of the initial qualification package. The QCP shall explain the linkage between the cement being furnished and the manufacturer’s/distributor’s quality control data, relative to ship-loads, barge-loads, railroad car-loads, and other applicable loads.

SECTION 901, BEGIN LINE 154, DELETE AND INSERT AS FOLLOWS:

(d) Rapid Hardening Hydraulic Cement

Rapid hardening hydraulic cement shall be calcium sulfoaluminate, CSA, cement furnished from a manufacturer or manufacturer/distributor on the ~~Department’s list~~ QPL of Cement Sources. A source may be added to the QPL by completing the requirements of ITM 806, Procedure U.

SECTION 901, BEGIN LINE 168, DELETE AND INSERT AS FOLLOWS:

Fly ash will be accepted from one of the sources on the QPL of Pozzolan Sources. Fly ash from different sources or different types of fly ash shall not be mixed or used alternately in the same construction unless authorized in writing. Fly ash will be subject to random assurance sampling and testing by the Department. Failure of these random samples to meet the specified requirements will be cause for ~~suspension~~ removal of the fly ash source ~~approval~~ from the QPL.

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 900 – MATERIALS DETAILS (various)

SECTION 901, BEGIN LINE 220, DELETE AND INSERT AS FOLLOWS:

3. Documentation

Fly ash suppliers requesting ~~approval~~ *to be included on the QPL for Pozzolan Sources* shall supply the following:

- a. ~~For the initial approval~~ *To be considered for inclusion on the QPL*, a current ~~Materials Safety Data Sheet~~ *SDS* and a summary of results for all specified tests for six consecutive months shall be submitted. ~~Ne~~ *Test results shall not be more than one year old at the time of request.*
- b. To maintain ~~approval~~ *standing on the QPL*, a summary of results for all specified tests shall be submitted monthly. The results of the daily tests shall be available ~~by telephone~~ during normal working hours.

SECTION 901, BEGIN LINE 269, DELETE AND INSERT AS FOLLOWS:

Slag cement will be accepted from one of the sources on the QPL of Pozzolan Sources. Slag cement from different sources or different grades of slag cement shall not be mixed or used alternately in the same construction unless approved in writing. Slag cement will be subject to random assurance sampling and testing by the Department. Failure of these random samples to be in accordance with the specified requirements will be cause for ~~suspension~~ *removal of the slag cement source approval from the QPL.*

SECTION 901, BEGIN LINE 309, DELETE AND INSERT AS FOLLOWS:

3. Documentation

Slag cement suppliers requesting ~~approval~~ *to be included on the QPL* shall supply the following:

- a. ~~For the initial approval~~ *To be considered for inclusion on the QPL*, a current ~~Safety Data Sheet~~ *SDS* and a summary of results for all specified tests for six consecutive months shall be submitted. ~~Ne~~ *Test results shall not be more than one year old at the time of request.*
- b. To maintain ~~approval~~ *standing on the QPL*, a summary of results for all specified tests shall be submitted monthly. The results of the daily tests shall be available ~~by telephone~~ during normal working hours.

SECTION 901, BEGIN LINE 351, DELETE AND INSERT AS FOLLOWS:

Silica fume will be accepted from one of the suppliers on the QPL of Pozzolan Sources. Silica fume from more than one of these suppliers shall not be mixed or used alternatively in the same construction unless authorized in writing. Silica fume will be subject to random assurance sampling and testing by the Department. Failure of the random samples to meet the specified requirements will be cause for ~~suspension~~ *removal of the silica fume supplier's approval from the QPL.*

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 900 – MATERIALS DETAILS (various)

SECTION 901, BEGIN LINE 417, DELETE AND INSERT AS FOLLOWS:

4. Documentation

Silica fume suppliers requesting approval *to be included on the QPL* shall supply the following to the Department's Division of Materials and Tests:

- a. ~~For initial approval~~ *To be considered for inclusion on the QPL*, a current ~~Material Safety Data Sheet~~ *SDS* and a summary of results for all specified tests for six consecutive months shall be submitted. ~~No~~ *Test results shall be more than one year old at the time of the request.*
- b. To maintain approval *standing on the QPL*, a summary of results for all specified tests shall be submitted monthly.

SECTION 902, BEGIN LINE 70, DELETE AS FOLLOWS:

The requirements for asphalt emulsions are as follows:

RS-2, HFRS-2, and SS-1h shall be in accordance with AASHTO M 140 except the cement mixing test is waived.

CRS-2P and HFRS-2P shall be in accordance with AASHTO M 316. The distillation temperature shall be 350°F.

CSS-1h shall be in accordance with AASHTO M 208.

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 900 – MATERIALS DETAILS (various)

SECTION 902, BEGIN LINE 99, DELETE AND INSERT AS FOLLOWS:

Characteristics ⁽¹⁾	Test Method	AE-90		AE-90S		AE-NT		AE-F		AE-150		AE-PL	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Test on Emulsion													
Viscosity, Saybolt Furol at 77°F (25°C) (77°F), min.s or Viscosity, Rotational Paddle at 25°C (77°F), mPa*s	AASHTO T 59					15	100		100	50			115
						30	200		200	100			230
Viscosity, Saybolt Furol at 77°F (25°C), max.	AASHTO T 59					100		100				115	
Viscosity, Saybolt Furol at 120°F (50°C) (122°F), min.s or Viscosity, Rotational Paddle at 50°C (122°F), mPa*s	AASHTO T 59	50		50						75	300		
		100		100						150	600		
Viscosity, Saybolt Furol at 120°F (50°C), max.	AASHTO T 59									300			
Demulsibility w/35 mL, 0.02N CaCl ₂ , % min.	AASHTO T 59			30									
Demulsibility w/50 mL, 0.10N CaCl ₂ , % min.	AASHTO T 59	75											
Oil Distillate by Distillation, mL/100 g Emulsion ⁽²⁾ max.	AASHTO T 59		4.0		3.0		4.0		4.0		7.0		3.0
Residue by Distillation, % min.	AASHTO T 59	65		65 ⁽⁴⁾		50		27	35	65		30	
Residue by Distillation, % max.	AASHTO T 59							35					
Sieve Test, sample retained, % max.	AASHTO T 59		0.10		0.10		0.30		0.10		0.10		0.10
Penetrating Ability, mm, min.	902.02(wu)											6.0	
Stone Coating Test, %	902.02(tr)3a	90								90			
Settlement, % (5 days) max.	AASHTO T 59		5.0				5.0						
Storage Stability, % max.	AASHTO T 59				1.0								
Tests on Residue													
Penetration (0.1 mm) at 77°F (25°C) (77°F), 100g, 5 s; min. ⁽³⁾	AASHTO T 49	100	200	90	150		40		90				
Penetration (0.1 mm) at 77°F (25°C), 100g, 5 s, max. ⁽³⁾	AASHTO T 49	200		150		40		90					
Penetration (0.1 mm) at 77°F (25°C) (77°F), 50g, 5 s; min. ⁽³⁾	AASHTO T 49									100	300		
Penetration (0.1 mm) at 77°F (25°C), 50g, 5 s, max. ⁽³⁾	AASHTO T 49									300			
Ductility at 77°F (25°C) (77°F), mm, min.	AASHTO T 51	400											

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 900 – MATERIALS DETAILS (various)

Ash Content, % max.	AASHTO T 111		1.0		1.0		1.0		1.0		1.0		1.0
Float Test at 140°F (60°C) (140°F) , s, min. ⁽³⁾	AASHTO T 50	1200		1200						1200			
Force Ratio, min.	AASHTO T 300			0.30									
Elastic Elongation Recovery, at 39°F (4°C) (39°F)	AASHTO T 301			58									
Notes: (1) Broken samples or samples more than 14 days old will not be tested. (2) Oil distillate shall be in accordance with ASTM D396, table 1, grade No. 1. (3) The Engineer may waive the test. (4) Maximum temperature to be held for 15 minutes at 350 ±9°F (175 ±5°C).													

APPROVED MINUTES

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 900 – MATERIALS DETAILS (various)

(c) ~~Cutback Asphalts~~Blank

~~Cutback asphalts shall be composed of an intimate homogeneous mixture of an asphalt base and a suitable distillate designed for medium, or slow curing. Cutback asphalts may also contain an additive as an aid in uniformly coating wet, damp, or dry aggregates used in patching mixtures or HMA pavements. These asphalts shall not contain more than 0.3% water as determined by ASTM D95, shall not separate when allowed to stand, and shall not foam when heated to permissible temperatures. When an additive is used, it shall be incorporated homogeneously in the asphalt at the point of manufacture. The temperature of the cutback asphalt shall not be higher than shown for that grade in 902.03. A type A certification in accordance with 916 shall be provided for cutback asphalt. The results of the following shall be shown on the certification.~~

1. Medium Curing Asphalts With and Without Additives

~~Medium curing asphalts with and without additives shall be in accordance with the following:~~

Characteristics	Grades			
	MC 70 MCA 70	MC 250 MCA 250	MC 800 MCA 800	MC 3000 MCA 3000
Flash Point (Open Tag-), °C ⁽⁴⁾	38+	66+	66+	66+
Kinematic Viscosity at 60°C (cSt) ⁽²⁾ ...	70–140	250–500	800–1600	3000–6000
Saybolt Furol Viscosity at 50°C (s)...	60–120			
Saybolt Furol Viscosity at 60°C (s)...		125–250		
Saybolt Furol Viscosity at 83°C (s)...			100–200	300–600
Distillation ⁽⁴⁾				
Distillate (% of total distillate to 360°C MC 70 @ 225°C):				
to 225°C.....	0–20	0–10		
to 260°C.....	20–60	15–55	35+	15+
to 316°C.....	65–90	60–87	45–80	15–75
Residue from distillation to 360°C (volume % by difference).....	55+	67+	75+	80+
Tests on Residue from Distillation ⁽⁴⁾				
Penetration, 25°C, 100 g, 5 s, – (0.1 mm)				
(without additive).....	120–250	120–250	120–250	120–250
(with additive).....	120–300	120–300	120–300	120–300
Ductility, 25°C (10 mm) ⁽³⁾	100+	100+	100+	100+
Solubility in organic solvents, %.	99.5+	99.5+	99.5+	99.5+
Notes: ⁽¹⁾ —Test may be waived when approved.				
⁽²⁾ —Viscosity may be determined by either the Saybolt Furol or Kinematic test. In case of dispute, the Kinematic viscosity test shall prevail.				
⁽³⁾ —If the ductility at 25°C is less than 100, the material will be acceptable if its ductility at 16°C is 100+.				
⁽⁴⁾ —Flash point by Cleveland Open Cup may be used for products having a flash point greater than 80°C.				

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 900 – MATERIALS DETAILS (various)

2. Slow Curing Asphalts With and Without Additives

~~Slow curing asphalts with and without additives shall be in accordance with the following:~~

Characteristics	Grades			
	SC-70 SCA-70	SC-250 SCA-250	SC-800 SCA-800	SC-3000 SCA-3000
Flash Point (Cleveland Open Cup), °C	66+	79+	93+	107+
Kinematic Viscosity at 60°C (cSt) ⁽²⁾	70–140	250–500	800–1600	3000–6000
Saybolt Furol Viscosity at 50°C (s)....	60–120	125–250	100–200	300–600
Saybolt Furol Viscosity at 60°C (s)....				
Saybolt Furol Viscosity at 83°C (s)....				
Distillation(1) Total Distillate to 360°C (% by volume).....	10–30	4–20	2–12	5
Float Test of Distillation Residue at 50°C (s).....	20–100	25–110	50–140	75–200
Ductility of Asphalt Residue at 25°C (10 mm) ⁽⁴⁾	100+	100+	100+	100+
Solubility in organic solvents, % ⁽⁴⁾	99.5+	99.5+	99.5+	99.5+
Notes: ⁽¹⁾ Test may be waived when approved. ⁽²⁾ Viscosity may be determined by either the Saybolt Furol or Kinematic test. In case of dispute, the Kinematic viscosity test shall prevail.				

SECTION 902, BEGIN LINE 212, DELETE AND INSERT AS FOLLOWS:

- ~~(n) Distillation of Cutback Asphaltic Products, except the length of condenser tube may be 400 mm ±24 mm..... AASHTO T 78~~
- (on) Float Test for Bituminous Materials AASHTO T 50
- (po) Kinematic Viscosity of Asphalts..... AASHTO T 201
- (qp) Absolute Viscosity of Asphalts..... AASHTO T 202
- (rq) Effect of Heat and Air on Asphalt Materials, Thin-Film Oven Test..... AASHTO T 179
- (sr) Effect of Heat and Air on a Moving Film of Asphalt, Rolling Thin Film Oven Test..... AASHTO T 240
- (ts) Testing Asphalt Emulsions AASHTO T 59

SECTION 902, BEGIN LINE 272, DELETE AND INSERT AS FOLLOWS:

- ~~(u) For coating test for cutback asphalts with additive, 20 g of 20 to 30 mesh Ottawa sand shall be placed in a clean 2 oz (60 mL)~~

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 900 – MATERIALS DETAILS (various)

~~wide-mouthed jar and covered with 25 g of distilled water at room temperature. One gram of the liquid asphalt to be tested shall be placed gently upon the surface of the water so that it floats and does not contact the sand. The lid shall then be placed on the jar and tightened securely. If the liquid asphalt to be tested is grade 70 or 250, the jar and contents shall be shaken vigorously for 30 s. If the grade is 800 or 3,000, the jar and contents shall be immersed in a 115°F water bath for 5 minutes to bring the contents of the jar to a temperature of approximately 100°F. The jar shall then be shaken vigorously for 30 s. After shaking, the asphalt coating on the sand shall be observed under a constant, strong light. Complete coating of the sand is required.~~

- (~~v~~t) Stripping tests for HMA mixtures using binder materials, with or without additives, shall be performed as follows:

SECTION 902, BEGIN LINE 318, DELETE AND INSERT AS FOLLOWS:

- (~~w~~u) Penetrating Ability of AE-PL.

SECTION 902, BEGIN LINE 353, DELETE AND INSERT AS FOLLOWS:

Thoroughly mix Standard Ottawa Sand, Reference Limestone Dust, and water. Weigh 190 ± 1 g of sand mixture into a 6 oz ointment tin. Level surface of sand with a spatula. Place the compacting adapter on the sand surface and slowly, over a period of about 5 s, compact the sand until the 20 psi load is achieved, which is approximately 100 lb on the Rimac Spring Tester. Remove the compacting device, avoiding disturbance to the sand surface. Quickly pour 12 g of the emulsion from a height of about 4 in. onto top of sand mixture. Start timer at start of pour. Stop timer when all emulsion penetrates into sand mixture. Delay 2 minutes then remove sand and mixture from one side of ointment tin, about 1/2 of mixture. Measure to determine average depth of penetration into sand mixture. Penetration time shall be 100 s or less; penetration depth shall be ~~1/4 in.~~ 6.0 mm or more.

- (~~x~~v) Flow Test for Asphalt for Coating Corrugated Metal Pipe AASHTO M 190
- (~~y~~w) Shock Test for Asphalt for Coating Corrugated Metal Pipe AASHTO M 190
- (z~~x~~) Viscosity Determinations of Asphalt Binder Using Rotational Viscometer AASHTO T 316
- (~~aa~~y) Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer AASHTO T 315

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 900 – MATERIALS DETAILS (various)

- (bbz) Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel AASHTO R 28

- (~~eee~~) Determining the Flexural Creep Stiffness of Asphalt Binder Using the Bending Beam Rheometer AASHTO T 313
- 400 mm ±24 mm AASHTO T 78

SECTION 906, BEGIN LINE 86, INSERT AS FOLLOWS:

A type C certification in accordance with 916 shall be provided for the polychloroprene joint *membrane* adhesive.

~~SECTION 906, BEGIN LINE 273, DELETE AND INSERT AS FOLLOWS:~~

~~(c) Type PCF~~

~~Pre-compressed foam joints, PCF, shall be furnished from the Department's listQPL of approved PCF Bridge Joints. PCF joints may be added to the approved listQPL by completing the requirements of ITM 806, Procedure C.~~

SECTION 907, BEGIN LINE 46, DELETE AND INSERT AS FOLLOWS:

907.03 Reinforced Concrete Horizontal Elliptical Pipe

This pipe shall be in accordance with AASHTO M 207. Precast concrete units shall be from a source listed in the Department's listQPL of Certified Precast Concrete Producers, in accordance with ITM 813.

907.04 Precast Concrete Manholes, Inlets, and Catch Basins

These units shall be in accordance with AASHTO M 199. References to diameter are applicable to corresponding dimensions in other than circular sections. Absorption tests will not be required for flat top or base slabs.

Precast concrete units shall be from a source listed in the Department's listQPL of Certified Precast Concrete Producers, in accordance with ITM 813.

SECTION 907, BEGIN LINE 164, DELETE AND INSERT AS FOLLOWS:

Precast concrete units shall be from a source listed on the Department's ListQPL of Certified Precast Concrete Producers, in accordance with ITM 813. Standard quality drain tile shall not be used. When specified, the pipe spigot shall have integral spacer lugs to provide for an annular opening and self-centering feature.

SECTION 907, BEGIN LINE 218, DELETE AND INSERT AS FOLLOWS:

907.16 Thermoplastic Pipe Requirements

A QPL of thermoplastic pipe and liner pipe will be maintained by the Department. The listQPL will specify the manufacturer and thermoplastic pipe designation. All of these materials shall comply with the applicable AASHTO or ASTM requirements listed in the following table and will only be accepted from qualified manufacturers. The manufacturer is defined as the plant which produces the thermoplastic pipe. The manufacturer shall become qualified by establishing a history of satisfactory quality control of these materials as evidenced by the test results performed by the manufacturer's testing laboratory.

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 900 – MATERIALS DETAILS (various)

SECTION 909, BEGIN LINE 3, DELETE AND INSERT AS FOLLOWS:

909.01 General Requirements

All necessary facilities for inspection of materials and manufacture of coatings, paints, and ingredients shall be granted. Free access to all parts of the premises where any or all of these products are being prepared shall be allowed. ~~Safety Data Sheets~~ SDSs shall be provided.

Paints and coatings shall be furnished ready for use without modification and shall not settle, cake, curdle, liver, gel, or develop excessive change in viscosity between time of manufacture and time of use. It shall remain capable of being readily dispersed with a paddle, or other approved methods, to a consistency appropriate for the intended use. Paints and coatings may be sampled and tested at any time prior to use. Paints and coatings that are part of an ~~approved~~ structural steel coating system *listed on the QPL of Structural Steel Coating Systems* shall be submitted in an unopened, full, and complete kit for testing.

[moved to a separate paragraph]

Individual batches of organic zinc primer and waterborne finish paint listed on the QPL of Coating Formulations shall be submitted in an unopened, full, and complete kit for testing.

[moved to a separate paragraph]

If, for any reason, re-sampling and re-testing following initial or prior ~~approval~~ acceptance is indicated, the latest test results shall prevail over all previous tests for material that has not been used. Previously ~~approved~~ accepted paint or coating that are stored for future use may be re-sampled and re-tested.

SECTION 909, BEGIN LINE 112, DELETE AND INSERT AS FOLLOWS:

~~3. Approval of Formulation~~ **Furnishing and Use**

~~The manufacturer shall obtain approval of the formulation prior to furnishing the primers.~~ Only zinc primers from the QPL of Coating Formulations shall be used. Zinc primers will be placed and maintained on the QPL of Coating Formulations in accordance with ITM 606.

SECTION 909, BEGIN LINE 217, DELETE AND INSERT AS FOLLOWS:

~~5. Approval of Formulation~~ **Furnishing and Use**

~~The manufacturer shall obtain approval of the formulation prior to furnishing the waterborne finish paint.~~ Only waterborne finish paint from the QPL of Coating Formulations shall be used. Waterborne finish paint formulations will be placed and maintained on the QPL of Coating Formulations in accordance with ITM 606.

SECTION 909, BEGIN LINE 267, DELETE AND INSERT AS FOLLOWS:

~~(c) Approval~~ **Furnishing and Use of Structural Steel Coating System**

~~The manufacturer shall obtain approval of each structural steel coating system prior to furnishing any of these coatings.~~ Only structural steel coating systems from the QPL of Structural Steel Coating Systems shall be used. Structural steel coating systems will be placed and maintained on the QPL of Structural Steel Coating Systems in accordance with ITM 606.

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 900 – MATERIALS DETAILS (various)

SECTION 914, BEGIN LINE 18, DELETE AND INSERT AS FOLLOWS:

914.02 Temporary Seed

Temporary seed will be *subject to approval* ~~for~~ *prior to* use by visual inspection of the Engineer. Temporary seed may be purchased from any commercial source provided the seed's package is clearly marked and labeled by the manufacturer as to its content and weight.

SECTION 914, BEGIN LINE 394 DELETE AND INSERT AS FOLLOWS:

(d) Porous Material

Porous material for tree root protection may be gravel, crushed stone, slag, or other porous material varying in size from 1 to 3 in. and ~~shall~~ *will be subject to approval before being* *prior to* used.

SECTION 915, BEGIN LINE 319, DELETE AND INSERT AS FOLLOWS:

In addition, one bearing pad from each type to be furnished for the structure will be required for laboratory testing. A type of bearing is defined by the length, width, and thickness of elastomer, and the number and thickness of internal shims. Bearings that differ by the dimensions of load plates vulcanized to similar elastomeric pads will also be considered different types. The material may be sampled prior to shipment to the project, provided suitable arrangements can be made through the Department's Division of Materials and Tests. Materials not previously sampled and ~~approved for use~~ *tested* shall be sampled *for testing* after delivery to the project site. Samples shall be furnished *for testing* at least 30 days before date of use. *Passing test results will be required prior to using the material.*

SECTION 915, BEGIN LINE 334, DELETE AS FOLLOWS:

All steel components shall be in accordance with ASTM A709, grade 36 unless otherwise shown on the plans. Where these assemblies are to be used in conjunction with ~~a self-weathering steel bridges~~, the steel components shall be in accordance with ASTM A709, grade 50W. Stainless steel mating surfaces shall be 14 gauge minimum ASTM A240, type 304 sheets with a maximum surface roughness of 20 Rms.

SECTION 917, BEGIN LINE 32, DELETE AND INSERT AS FOLLOWS:

917.03 Source Approval Requirements

The Department's Division of Materials and Tests shall be notified in writing that the aggregate source wants to become a Certified Aggregate Producer. The aggregate source shall identify the specific products ~~for which approval is sought~~ *the source will work to qualify for initial source certification. Such list shall include* *Additionally, the source shall identify all of the* products to be produced at the source regardless of whether the products are for Department or other uses.

SECTION 917, BEGIN LINE 57, DELETE AND INSERT AS FOLLOWS:

(c) Step 3

The aggregate source will be included on the QPL of Certified Aggregate Producers following satisfactory performance during the trial phase *and successful completion of the trial phase audit*. Achieving such status shall be accompanied by the inherent responsibility

REVISION TO 2022 STANDARD SPECIFICATIONS

DIVISION 900 – MATERIALS DETAILS (various)

to operate within the tenets of ITM 211. The Certified Aggregate Producer shall produce material at a compliance requirement of ~~effectively~~ *a minimum of 95%* of the appropriate specifications. The Department will monitor such compliance through ~~the use of~~ periodic in-depth inspections *and annual audits* of the production site *and source records*. ~~Continuing approval~~ *Initial and ongoing certification* is contingent upon the effectiveness of the producer's Quality Control Plan as evidenced by the quality and uniformity of the products which are prepared in accordance with the appropriated specifications and ITM 211.

917.04 Removal from Certified Producer Status

The Department's Division of Materials and Tests will be responsible for the review and removal of an aggregate source from ~~being an approved~~ *on the QPL* of Certified Aggregate Producers. A Certified Aggregate Producer shall operate so as to avoid a need for the Department to exercise this action. However, removal from Certified Aggregate Producer status may be necessary for situations such as:

SECTION 917, BEGIN LINE 83, DELETE AND INSERT AS FOLLOWS:

- (c) the Certified Aggregate Producer has failed to take immediate corrective action relative to deficiencies in the performance of the ~~approved Quality Control Plan~~ *QCP*;

SECTION 925, BEGIN LINE 98, DELETE AND INSERT AS FOLLOWS:

925.02 Model Approval

Each cabinet model ~~shall~~ *will* be *subject to approval* prior to use. A period of evaluation will commence when the Department receives a preliminary product evaluation form accompanied by the product brochure, detailed electrical schematics, and cabinet assembly drawings. The Operations Support Division will advise the manufacturer or vendor, in writing, of the date and location to deliver the cabinet for which model approval is requested. Electrical schematics for the cabinet, cabinet assembly drawings, and parts lists shall be furnished with the controller when it is submitted to the Operations Support Division for evaluation and testing.

Only models from the QPL of Traffic Signal and ITS Devices in effect as of the date of letting, or as otherwise specified, shall be used on the contract. Continued failure and repeated malfunctions of a qualified controller or control equipment shall be a cause to remove that model from the QPL. A design change to a qualified model or cabinet will require re-submittal of the model for testing, evaluation, and approval. Permanent addition or removal of component parts or wires will be considered to be a design change.

~~SECTION 926, BEGIN LINE 80, DELETE AND INSERT AS FOLLOWS:~~

~~The lens shall consist of a smooth front surface free from projection or indentations other than for purposes of identification or orientation of the reflector. The rear surface shall have a prismatic configuration such that it will ~~affect~~ *effect* (Note: the word "effect" is used in 2022 SS) total internal reflection of light. The manufacturer's trademark shall be molded legibly into the face of the lens.~~

COMMENTS AND ACTION

DIVISION 900 – MATERIALS DETAILS (various)

DISCUSSION:

Mr. Reilman introduced and presented this item stating that unneeded terminology and awkward phrasing exists and updates are needed in the 900 DIVISION. Cutback asphalt is not used in contracts, but rather by maintenance only. Additional test methods exist for testing asphalt emulsion viscosity.

Mr. Reilman proposed to clean up the 900 DIVISION by incorporating the proposed changes into the 2024 spec book. Add any necessary language to recurring INDOT Maintenance QPAs and reference AASHTO M 82 and ASTM D2026. Delete cutback asphalt from standard specifications. Add test method for viscosity, rotational paddle, T 382, and incorporate clean-up type of edits to the asphalt emulsion table in 902.01(b). This same asphalt emulsion table appeared as part of item 7 on the 12/17/21 agenda. It was approved for insertion into the 2024 spec book with no RSP. If this version of the table is approved, this version should be the version that is incorporated into the 2024 spec book.

Mr. Awwad suggested not crossing out the language in 902. Mr. Beeson concurred and Mr. Reilman agreed. Mr. Reilman chose to remove the revision to 906, beginning line 273, from this proposal. Other minor revisions are as shown, including striking out the words “by telephone”.

Mr. Reilman revised his motion which was seconded by Mr. Novak.

There was no further discussion and this item passed as revised.

	<u>Action:</u>	
Motion: Mr. Reilman	—	Passed as Submitted
Second: Mr. Novak	X	Passed as Revised
Ayes: 9	—	Withdrawn
Nays: 0		
FHWA Approval: Yes		
2022 Standard Specifications Sections referenced and/or affected: Division 900, begin pg. 961.	X	2024 Standard Specifications
	—	Revise Pay Items List
Recurring Special Provisions or Plan Details:	—	Create RSP (No. __) Effective:
Standard Drawing affected: NONE	—	Revise RSP (No. __) Effective:
Design Manual Sections affected: NONE	—	Standard Drawing Effective:
GIFE Sections cross-references: NONE	—	Create RPD (No. __) Effective:
	—	GIFE Update
	—	Frequency Manual Update
	—	SiteManager Update

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: There is confusion on the frequency of DCP testing in RSP 216-R-745.

PROPOSED SOLUTION: Add language to the specifications clarifying the DCP testing frequency. Also increase the size of lots.

APPLICABLE STANDARD SPECIFICATIONS: 216 and existing RSP 216-R-745

APPLICABLE STANDARD DRAWINGS: none

APPLICABLE DESIGN MANUAL SECTION: none

APPLICABLE SECTION OF GIFE: none

APPLICABLE RECURRING SPECIAL PROVISIONS: existing RSP 216-R-745

PAY ITEMS AFFECTED: none

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Jim Reilman, Nayyar Siddiki

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE:

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 9/25/22

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? Yes

Construction time? Yes

Customer satisfaction? Yes

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? N/A

Asset preservation? N/A

Design process? N/A

Will this change provide the contractor more flexibility? Yes

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO SPECIAL PROVISION

216-R-745 CELLULAR CONCRETE FILL, CCF

216-R-745 CELLULAR CONCRETE FILL, CCF

(Adopted 10-21-21)

The Standard Specifications are revised as follows:

SECTION 216, BEGIN LINE 9, DELETE AND INSERT AS FOLLOWS:

216.02 Materials

Materials shall be in accordance with the following:

Cement.....	901.01(b)
Fly Ash	901.02
Foaming Agent.....	912.05
Water	913.01

An admixture in accordance with 912.03 may be used as recommended by the CCF manufacturer.

~~A foaming liquid concentrate in accordance with ASTM C796 agent shall be used to produce CCF with the CCF properties shown in accordance with 216.04. The foaming liquid concentrate agent shall be chosen from those shown on the QPL of CCF Manufacturers/Installers.~~

CONSTRUCTION REQUIREMENTS

216.03 Mix Design

A mix design prepared in accordance with the geotechnical report shall be submitted to the Engineer for approval at least five work days before the CCF operations begin. A cellular concrete manufacturer/installer shall be chosen from those shown on the QPL of CCF Manufacturers/Installers.

SECTION 216, BEGIN LINE 61, DELETE AND INSERT AS FOLLOWS:

216.08 Installation

CCF shall be proportioned, mixed, and placed in lifts as recommended by the manufacturer. Transit mixers will not be acceptable for mixing the CCF. ~~Three DCP tests for every 500 sq ft section will be performed. DCP testing will be in accordance with ITM 509. The CCF shall not be subjected to load or disturbed by construction activities until a minimum compressive strength DCP blow count of 25 psi has been achieved blows per 12 in. has been achieved. DCP will be performed in accordance with ITM 509 the average DCP blow count from three tests on a section is at least 10 per 12 in. depth.~~

The final surface finish shall be within ± 0.1 ft of the plan elevation.

216.09 Lots

Lots will be defined as ~~300~~500 cu yds of CCF placed. A partial lot equal to or less

REVISION TO SPECIAL PROVISION

216-R-745 CELLULAR CONCRETE FILL, CCF

than 60 cu yds shall be included in the previous lot. A partial lot greater than 60 cu yds but less than ~~300~~500 cu yds will be considered a full lot.

SECTION 912, BEGIN LINE 199, INSERT AS FOLLOWS:

912.05 Foaming Agent

Foaming agents used in making preformed foam for cellular concrete *fill and cellular concrete* grout shall be in accordance with ASTM C869. A type C certification in accordance with 916 shall be provided for the foaming agent.

APPROVED MINUTES

COMMENTS AND ACTION

216-R-745 CELLULAR CONCRETE FILL, CCF

DISCUSSION:

This item was introduced and presented by Mr. Reilman who explained that there is confusion on the frequency of DCP testing in RSP 216-R-745.

Mr. Reilman proposed to add language to the specifications clarifying the DCP testing frequency, and to also increase the size of the lots. Further explanation was provided by Mr. Siddiki.

There was no further discussion and this item passed as submitted.

<p>Motion: Mr. Reilman Second: Mr. Novak Ayes: 9 Nays: 0 FHWA Approval: Yes</p>	<p><u>Action:</u></p> <p><input checked="" type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn</p>
<p>2022 Standard Specifications Sections referenced and/or affected: 216 begin pg. 249.</p> <p>Recurring Special Provisions or Plan Details: 216-R-745 CELLULAR CONCRETE FILL, CCF</p> <p>Standard Drawing affected: NONE</p> <p>Design Manual Sections affected: NONE</p> <p>GIFE Sections cross-references: NONE</p>	<p><input checked="" type="checkbox"/> 2024 Standard Specifications Revise Pay Items List</p> <p><input type="checkbox"/> Create RSP (No. __) Effective:</p> <p><input checked="" type="checkbox"/> Revise RSP (No. <u>216-R-745</u>) Effective: <u>March 1, 2023</u></p> <p><input type="checkbox"/> Standard Drawing Effective:</p> <p><input type="checkbox"/> Create RPD (No. __) Effective:</p> <p><input type="checkbox"/> GIFE Update <input checked="" type="checkbox"/> Frequency Manual Update <input checked="" type="checkbox"/> SiteManager Update</p>

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: The default pavement marking width in INDOT standards is currently 4 in. but the use of 6 in. as the normal pavement marking line width has been found to have a substantial safety benefit (36.5% reduction in crashes on two-lane highways) and is easier for vehicles with machine vision (including lane departure warning systems) to recognize, particularly at night or during daytime wet weather. The proposed MUTCD would require 6 in. lines on all roadways with a speed limit greater than 40 mph.

Similarly, the use of pavement markings that maintain retro-reflectivity during wet weather has been found to have a significant safety benefit (12.9% reduction in crashes) and be easier for vehicles with machine vision to recognize. But the use of wet reflective pavement markings is not currently a standard treatment at INDOT.

PROPOSED SOLUTION: Change INDOT pavement marking standards to require 6 in. as the normal line width and 10 in. as the wide line width on the state highway system. The pavement marking line width for LPA contracts would be left unchanged. Also require all durable markings placed to be wet reflective.

APPLICABLE STANDARD SPECIFICATIONS: 101.61, 808.04, 808.07, and 921.02

APPLICABLE STANDARD DRAWINGS: 606-SHCG, 808-DLIM, 808-MKNB, and 808-MKRM

APPLICABLE DESIGN MANUAL SECTION: 502-2

APPLICABLE SECTION OF GIFE: N/A

APPLICABLE RECURRING SPECIAL PROVISIONS: N/A

PAY ITEMS AFFECTED: No

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Yes, Traffic Standards Subcommittee

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: Any 606 or 808 pay item

IMPACT ANALYSIS (attach report): Yes

Submitted By: Joe Bruno, on behalf of Dave Boruff

Title: INDOT

Division: Traffic Engineering Division

E-mail: jbruno@indot.in.gov

Date: 9/26/2022

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Qualified Products List (QPL)? No

Will this proposal improve:

Construction costs? No

Construction time? No

Customer satisfaction? Yes

Congestion/travel time? No

Ride quality? Yes

Will this proposal reduce operational costs or maintenance effort? No

Will this item improve safety:

For motorists? Yes

For construction workers? No

Will this proposal improve quality for:

Construction procedures/processes? No

Asset preservation? No

Design process? Yes

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? No

Can this item improve/reduce the number of potential change orders? Yes

Is this proposal needed for compliance with:

Federal or State regulations? Yes

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda: N/A

1 When used, purple markings ~~shall supplement lane line or edge line markings for toll plaza~~
2 ~~approach lanes that are restricted to use only by vehicles with registered electronic toll collection~~
3 ~~accounts, shall be in accordance with the provisions of Chapters 3F and 3H.~~ Moved part of the
4 Standard to new Chapter 3F and new Chapter 3H

5 ~~Option:~~Standard: Changed from Option to Standard

6 Colors used for ~~When pavement markings that simulate official route shield signs (see Section~~
7 ~~2D.11) may be are used (see Section 3B.22), as colors of symbol markings to simulate route shields~~
8 ~~on the pavement (see Section 3B.20) the colors shall be the same as those that are used for the~~
9 ~~official route signs (see Section 2D.11).~~ Rewritten as a Standard statement

10 Black may be used in combination with the colors mentioned in the first sentence of Paragraph 1
11 where a light colored pavement does not provide sufficient contrast with the markings. Moved to
12 follow Paragraph 1 of this section

13 Support:

14 ~~When used in combination with other colors, black is not considered a marking color, but only a~~
15 ~~contrast enhancing system for the markings.~~ Incorporated into the relocated Paragraph 8 of this
16 section

17 Provisions regarding colored pavements are contained in Chapter 3H.

18 Section ~~3A.06~~3A.04 Functions, Widths, and Patterns of Longitudinal Pavement 19 Markings

20 Standard:

21 The general functions of longitudinal lines shall be as follows:

- 22 A. A double line indicates maximum or special restrictions.
- 23 B. A solid line discourages or prohibits crossing (depending on the specific application).
- 24 C. A broken line indicates a permissive condition, ~~and~~
- 25 D. A dotted lane line provides ~~guidance or~~ warning of a downstream change in lane function.
- 26 E. A dotted line used as a lane line or edge line extension guides vehicles through an
27 intersection, a taper area, or an interchange ramp area.

28 The widths and patterns of longitudinal lines shall be as follows:

- 29 A. Normal width line—4 to 6 inches wide. 6 inches wide for freeways, expressways, and
30 ramps; 6 inches for all other roadways with speed limits > 40 mph, 4 to 6 inches for all other
31 roadways.
 - 32 B. Wide line—~~at least twice the width of a normal line~~ at least 8 inches in width if 4 inch or 5
33 inch normal width lines are used and at least 10 inches in width if 6 inch normal width lines are
34 used.
 - 35 C. Double line—two parallel lines separated by a discernible space. The pavement surface
36 shall be visible between the lines in the same way that it is visible outside the lines, except where
37 contrast markings are used in combination with the double line (see Section 3A.03).
 - 38 D. Broken line—normal width line segments separated by gaps.
 - 39 E. Dotted line—noticeably shorter line segments separated by shorter gaps than used for a
40 broken line. The width of a dotted line extension shall be at least the same as the width of the line
41 it extends.
- 42 Guidance:
43 The discernible space separating the parallel lines of a double line should not exceed that which is
44 necessary to be recognized as a double line rather than two separate, disassociated single lines.

REVISION TO 2022 STANDARD SPECIFICATIONS, SPECIAL PROVISIONS, AND STANDARD DRAWINGS

808-T-xxx PAVEMENT MARKINGS (PROPOSED NEW)

E 606-SHCG Series

E 808-DLIM Series

E 808-MKNB Series

E 808-MKRM Series

MARKUPS AND PROPOSED DRAFTS AVAILABLE AT:

https://www.in.gov/dot/div/contracts/standards/sc/2022/oct/Item_09Stddrawings%20221020.pdf

808-T-xxx PAVEMENT MARKINGS

(Adopted xx-xx-22)

The Standard Specifications are revised as follows:

SECTION 101, AFTER LINE 464, DELETE AND INSERT AS FOLLOWS:

101.61 State Highway System

The highways and streets in Indiana for which responsibility is assigned to the Department.

101.612 Street

A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

(Note: After approval of proposed changes to Section 101 by the Standards Committee, the remainder of consequent definitions will be renumbered and references in Standard Specifications will be updated respectively).

SECTION 808, BEGIN LINE 73, DELETE AND INSERT AS FOLLOWS:

(a) Center Lines

Center lines shall be used to separate lanes of traffic moving in opposite directions. All center line markings shall be yellow in color and ~~46~~ in. in width *on the state highway system, and 4 in. wide on all other roads*. They shall be placed such that the edge of the marking, nearest to the geometric centerline of the roadway, shall be offset ~~43~~ in. from the geometric centerline *on the state highway system and 4-3 in. on all other roads unless a different offset is approved by the Engineer*.

The center line of a multi-lane roadway shall be marked with a double solid line. The two lines forming the double solid line shall be spaced ~~86~~ in. apart *on the state highway system, 4-6 in. apart on all other roads*, and shall be equally offset on opposite sides of the geometric centerline *unless a different spacing is approved by the Engineer*.

The center line of a two-lane, two-way roadway, where passing is allowed in both directions, shall be marked with a broken line.

The center line of a two-lane, two-way roadway, where passing is allowed in one direction only, shall be marked with a double line, consisting of a broken line and a solid line. The broken line and the solid line shall be spaced ~~86~~ in. apart *on the state highway system, 4-6 in. apart on all other roads*, and shall be equally offset on opposite sides of the geometric centerline *unless a different spacing is approved by the Engineer*. The solid line

REVISION TO 2022 STANDARD SPECIFICATIONS, SPECIAL PROVISIONS, AND STANDARD DRAWINGS

808-T-xxx PAVEMENT MARKINGS (PROPOSED NEW)

E 606-SHCG Series

E 808-DLIM Series

E 808-MKNB Series

E 808-MKRM Series

shall be offset toward the lane where passing is prohibited. The broken line shall be offset toward the lane where passing is allowed.

The center line shall be placed within the milled corrugation when center line rumble stripes are specified. Placement of the center line marking in the milled corrugation does not alter the pavement marking performance requirements of 808.07.

(b) Lane Lines

Lane lines shall be used to separate lanes of traffic moving in the same direction. Normal width lane line markings shall be white in color and shall be ~~56~~ in. wide on ~~interstates and freeways~~ *the state highway system*, and 4 in. wide on all other roads. They shall be offset 4 in. to the right of longitudinal pavement joins or divisions between traffic lanes. [next statement moved to new paragraph]

Wide lane lines for lane drops, route splits, or auxiliary lanes shall be white in color and shall be ~~810~~ in. wide *on the state highway system*, and 8 in. wide on all other roads. White solid lines shall be used to mark lane lines only when specified or directed.

(c) Edge Lines

Edge lines shall be used to outline and separate the edge of pavement from the shoulder. Edge line markings shall be ~~46~~ in. in width *on the state highway system*, and 4 in. wide on all other roads. ~~and~~ *The edge lines* shall be placed such that the edge of the marking nearest the edge of the pavement shall be offset 4 in. from the edge of the pavement except as otherwise directed. Right edge lines shall be marked with a white solid line and left edge lines shall be marked with a yellow solid line.

SECTION 808, BEGIN LINE 192, INSERT AS FOLLOWS:

3. *Dry* ~~R~~retro-reflectivity. Contracts with 50,000 ft or more of longitudinal paint line or 10,000 ft for each type of longitudinal durable marking line applied shall have retro-reflectivity measured, except *black markings and* markings placed on seal coat pavements placed in accordance with 404. Longitudinal lines shall meet required minimum initial and retained average retro-reflectivity measurements.

SECTION 808, AFTER LINE 223, INSERT AS FOLLOWS:

4. *Wet* retro-reflectivity. *Contracts with longitudinal durable marking line applied shall meet the required longitudinal line minimum measurements for initial wet retro-reflectivity and will be measured by the Department in accordance with ASTM E2177 at the discretion of the Engineer. The testing period will be not less than 14 days to not more than 30 days after the durable longitudinal lines are applied. The initial wet recovery retro-reflectivity for white markings shall exceed 275 mcd/m²/lx and yellow shall exceed 175 mcd/m²/lx. Sampling zones that do not meet these wet*

REVISION TO 2022 STANDARD SPECIFICATIONS, SPECIAL PROVISIONS, AND STANDARD DRAWINGS

808-T-xxx PAVEMENT MARKINGS (PROPOSED NEW)

E 606-SHCG Series

E 808-DLIM Series

E 808-MKNB Series

E 808-MKRM Series

retro-reflectivity levels for white or yellow markings shall be replaced or receive an additional layer of durable marking material and supplemental elements at no additional cost.

SECTION 808, BEGIN LINE 323, DELETE AND INSERT AS FOLLOWS:

2. Thermoplastic

a. Application

Thermoplastic marking shall be applied in molten form by conventional extrusion, by ribbon type extrusion, or spray when the pavement and ambient air temperatures are 50°F and rising. Heat bonded preformed thermoplastic may be used for transverse or message markings. The average final thickness of each 36 in. length of the thermoplastic marking shall be no less than 90 mils and no more than 125 mils. Immediately following the application of the thermoplastic markings, ~~additional~~ retro-reflectorization shall be provided by applying *pavement marking* beads to the surface of the molten material ~~at a uniform minimum rate of 8 lb/100 sq ft of marking~~. *Apply a first drop of supplemental elements per shall be applied in accordance with the manufacturer's recommendations and a second drop of standard, modified standard, or supplemental beads per in accordance with the manufacturer's recommendations.* Individual passes of markings shall not overlap or be separated by gaps greater than 1/4 in. longitudinally.

SECTION 808, BEGIN LINE 364, DELETE AND INSERT AS FOLLOWS:

3. Preformed Plastic

a. Application

The markings shall be applied *by technicians certified by the manufacturer. The markings shall be applied* when the air temperature is a minimum of 40°F and rising. A primer is required if the ambient air temperature is below 50°F. The pavement surface shall be primed with a binder material in accordance with the manufacturer's recommendations.

~~If there is a dispute regarding installation, the manufacturer shall provide a trained representative to ensure that the installation is properly performed.~~

SECTION 808, BEGIN LINE 382, DELETE AND INSERT AS FOLLOWS:

4. Multi-Component

a. Application

This material shall be applied only when the pavement and ambient air temperatures are 40°F and rising. The wet film thickness of the marking material shall be a minimum of ~~20~~25 mils. Immediately following the application of the markings, ~~additional~~ reflectorization shall be provided by applying *pavement marking* beads to the surface of the wet marking ~~at a uniform minimum rate of 20 lb/gal. of marking~~. *Apply a first drop of supplemental elements shall be applied per in accordance with the*

REVISION TO 2022 STANDARD SPECIFICATIONS, SPECIAL PROVISIONS, AND STANDARD DRAWINGS

808-T-xxx PAVEMENT MARKINGS (PROPOSED NEW)

E 606-SHCG Series

E 808-DLIM Series

E 808-MKNB Series

E 808-MKRM Series

manufacturer's recommendations and a second drop of standard, modified standard, or supplemental beads perin accordance with the manufacturer's recommendations.

SECTION 921², BEGIN LINE 124, DELETE AND INSERT AS FOLLOWS:

4. Supplemental Elements

These shall be for ~~color, skid resistance, or wet weather retro-reflectivity and may~~ shall be used for *thermoplastic and multi-component longitudinal line markings provided they do* but shall not exhibit a characteristic of toxicity referenced in AASHTO M 247. *The supplemental elements shall be chosen selected from the following list: QPL of Pavement Marking Beads.*

- a. 3M Connected Roads All Weather Elements Series 70E or 50E*
- b. Potters VisiUltra 455*
- c. SWARCO Megalux Beads*

A type DC certification in accordance with 916 shall be ~~provided~~ furnished for the supplemental elements.

² corrected 10/27/22

COMMENTS AND ACTION

808-T-xxx PAVEMENT MARKINGS

E 606-SHCG Series

E 808-DLIM Series

E 808-MKNB Series

E 808-MKRM Series

DISCUSSION:

This item was introduced and presented by Mr. Bruno, sitting in as proxy for Mr. Boruff, who explained that the default pavement marking width in INDOT standards is currently 4 in. but the use of 6 in. as the normal pavement marking line width has been found to have a substantial safety benefit of 36.5% reduction in crashes on two-lane highways, and is easier for vehicles with machine vision, including lane departure warning systems, to recognize, particularly at night or during daytime wet weather. The proposed MUTCD would require 6 in. lines on all roadways with a speed limit greater than 40 mph.

Similarly, the use of pavement markings that maintain retro-reflectivity during wet weather has been found to have a significant safety benefit of 12.9% reduction in crashes, and be easier for vehicles with machine vision to recognize. But the use of wet reflective pavement markings is not currently a standard treatment at INDOT.

Mr. Bruno proposed to change INDOT pavement marking standards to require 6 in. as the normal line width and 10 in. as the wide line width on the state highway system. The pavement marking line width for LPA contracts would be left unchanged. Mr. Bruno also proposed to require all durable markings placed to be wet reflective.

Prior to the meeting - Mr. Koch asked, with regard to the proposed language in 808.04(a), for other roads, are we intending to narrow the gap or should the double lines be spaced 8 in. apart per our current practice? Mr. Bruno responded that yes, under the proposal, the offset for the centerline joint will be reduced from 4 in. to 3 in. The offset for longitudinal joints near the edge line and any lane lines will remain 4 in.

Mr. Koch stated that for 'all other roadways' we state the offset from centerline is 4 in. which would create an 8 in. separation, and we are also stating the lines are to be 4 in. apart. Mr. Bruno answered that normally, local roads do not have centerline RPM's and the total gap between lines in a no passing zone is 4 in. But where passing is allowed, the offset for the single yellow line should still be 4 in. to minimize crack sealing obscuring the centerline marking. As a result for local roads the proposal should be revised to read: "a minimum of 2 in. to a maximum of 4 in. on all other roads".

Mr. Koch said that he is wary of allowing a 2 – 4 in. tolerance as somebody will attempt to stripe centerline one line at a time. If we want a 4 in. separation between the lines for slower speed non INDOT roadway we should state such. The proposal addresses line width if INDOT or others control the roadway. We also construct LPA roadways with speed limits exceeding 40 mph. Would you please review & address the MUTCD speed threshold for non INDOT roadways.

Mr. Bruno answered that the MUTCD language included as background information is proposed and not final. I anticipate the final version to be for speed limits of 50 mph and above, but that is just my guess. The final version of the next MUTCD will be issued in May of 2023, or perhaps a few months before, and states will have two years to either adopt it or adopt a state MUTCD, or supplement, that is in substantial conformance with the federal MUTCD. Given that municipalities and counties will be affected differently by the proposed threshold for marking width, the spec proposal is intended to preserve the status quo on LPA contracts until there is a better understanding of how supportive LPA's are of implementing wider lines. All revisions are shown in these minutes.

Mr. Koch replied with the understanding that we do not want to place a burden on locals and we are only talking about an inch here or there; familiarity from place to place has benefits perception wise and potentially for the installer. Can the spray head shift during install? Are we sure we want a 3 in. offset for the state system and 4 / 2 for local roadways? Seems as though this would create confusion. My original question related to the yellow highlights seeming to convey a conflicting message which would still have conflicting guidance as to where to spray a line. Are we ready for this change if the MUTCD has yet to be finalized?

Mr. Bruno responded that the spray width cannot be changed during application of a pavement marking line. Currently, lane lines are 5 in. wide on interstates and the edge lines are 4 in. wide, so contractors must adjust the

COMMENTS AND ACTION

808-T-xxx PAVEMENT MARKINGS

E 606-SHCG Series

E 808-DLIM Series

E 808-MKNB Series

E 808-MKRM Series

equipment before applying a 5 in. line. I should clarify that the 2 in. offset in no passing zones is really a 4 in. offset since the centerline is two solid yellow lines spaced 4 in. apart, and each is 2 in. from the geometric centerline. For segments where passing is allowed, the centerline pattern is one broken yellow line that is offset 4 in. to one side of the geometric centerline. Still, to improve consistency between state and local roads, what about setting a default gap width for local roads that would also provide for variation between counties and municipalities, with info about it added to the GIFE?

Regarding the readiness for the change, Design Memo 21-24 already implemented wider lines for the state highway system beginning with the July 2022 lettings. So at this point we are just bringing the Standard Specifications and Standard Drawings up to the recent design guidance. It is also my understanding that INDOT's executive staff, particularly JD Brooks and Lyndsay Quist, are supportive of the proposed changes.

With regard to the Supplemental Elements, Mr. Novak asked if it would be better to have a QPL or a materials spec instead of calling out specific products in the proposed spec change. Mr. Bruno replied that the intent is to keep this revision to 921 as an RSP and not put it into the 2024 Standard Specifications. Using a material specification instead of listing the manufacturers is not going to work due to the different gradations of wet reflective elements that 3M and Potters use. But creating a QPL instead is an option to consider.

Mr. Bruno mentioned that the Chemistry Lab at Materials & Tests is currently responsible for evaluating the pavement marking glass bead samples that come in for in-house use by district paint crews. Mr. Bruno asked Mr. Reilman if the Chemistry Lab would like to own the ITM and QPL for wet reflective elements, defer to the Traffic Engineering Division, or make it a joint effort? Mr. Reilman responded that after reviewing ASTM E2177, this is not a test that can be performed in the lab. It requires the sample pavement marking to be applied to a pavement surface. Thus, M&T prefers to defer to the Traffic Engineering Division as you may want to coordinate with a District or Subdistrict facility that has an area of pavement where the pavement markings can be applied.

Mr. Novak said he'd prefer it go to a QPL rather become an RSP, which means the language in the 921 portion needs revised. This will need to occur prior to the February 2023 Standards Committee meeting. Mr. Beeson asked how this QPL will happen, and if a ITM will be revised or if a new ITM will need to be created. Mr. Reilman said the next ITM meeting is in two weeks. Mr. Bruno and Mr. Boruff will coordinate with M&T.

Mr. Bruno revised his motion, which was seconded by Mr. Reilman.

COMMENTS AND ACTION

808-T-xxx PAVEMENT MARKINGS
 E 606-SHCG Series
 E 808-DLIM Series
 E 808-MKNB Series
 E 808-MKRM Series

[continued]

	Action:
Motion: Mr. Bruno	
Second: Mr. Reilman	
Ayes: 9	<input type="checkbox"/> Passed as Submitted
Nays: 0	<input checked="" type="checkbox"/> Passed as Revised
FHWA Approval: Yes	<input type="checkbox"/> Withdrawn
2022 Standard Specifications Sections referenced and/or affected: 101 pg 11; 808 begin pg. 941; 921 pg. 1154.	<input checked="" type="checkbox"/> 2024 Standard Specifications <input checked="" type="checkbox"/> Revise Pay Items List
Recurring Special Provisions or Plan Details: PROPOSED NEW	<input checked="" type="checkbox"/> Create RSP (No. <u>808-T-233</u>) Effective: <u>March 1, 2023</u>
Standard Drawing affected: 606-SHCG, 808-DLIM, 808-MKNB, and 808- MKRM	<input type="checkbox"/> Revise RSP (No. <u> </u>) Effective:
Design Manual Sections affected: 502-2	<input checked="" type="checkbox"/> Standard Drawing: 606-SHCG, 808-DLIM, 808- MKNB, and 808-MKRM Effective: <u>September 1, 2023</u>
GIFE Sections cross-references: NONE	<input checked="" type="checkbox"/> Create RPD (No. <u>606-T-234d</u> and <u>808-T-233d</u>) Effective: <u>March 1, 2023</u>
	<input checked="" type="checkbox"/> GIFE Update
	<input checked="" type="checkbox"/> Frequency Manual Update
	<input checked="" type="checkbox"/> SiteManager Update

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: Latex modified concrete (LMC), an option in the 509 partial depth joint patching specification, is not performing as intended.

PROPOSED SOLUTION: Remove the option to use LMC in 509.

APPLICABLE STANDARD SPECIFICATIONS: 509

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: create new 509 RSP

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Rick Harris, Abul Mazumder, Mike Nelson, Jim Reilman, ACPA-Indiana

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: all contracts with a 509 pay item

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 10/6/22

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? N/A

Construction time? N/A

Customer satisfaction? Yes

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? Yes

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? N/A

Will this change provide the contractor more flexibility? No

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? N/A

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO 2022 STANDARD SPECIFICATIONS

SECTION 509 – PORTLAND CEMENT CONCRETE PAVEMENT, PCCP, JOINT REPAIR

- 509.03 Concrete Mix Design
- 509.04 Concrete Mix Criteria
- 509.06 Trial Batch

- 509.10 Concrete Mixing and Transportation
- 509.12 Placing and Finishing Concrete

The Standard Specifications are revised as follows:

SECTION 509, BEGIN LINE 36, DELETE AND INSERT AS FOLLOWS:

509.03 Concrete Mix Design

A concrete mix design, CMD, for the partial depth joint repair and bottom-half joint repair shall be identified as being one of the following types and shall be in accordance with 509.04.

- (a) Prepackaged concrete patching material, CPM
- (b) Ordinary portland cement-based concrete, OPCC
- (c) Rapid hardening cement-based concrete, RHCC
- ~~(d) Latex modified concrete, LMC~~
- ~~(e)~~ Latex modified concrete, very early strength, LMC-VE
- ~~(f)~~ Rapid setting patch materials, RSP.

A concrete mix design submittal, CMDS, for OPCC, RHCC, ~~LMC~~, and LMC-VE shall be submitted in accordance with 506.03, except that the trial batch shall be in accordance with 509.05. Prepackaged concrete patching materials, CPM and RSP, are not required to follow the submittal format of a CMDS, however, the Department shall be notified of their intended use. The CMDS, or notification of using CPM or RSP, shall be submitted a minimum of seven calendar days prior to the trial batch.

509.04 Concrete Mix Criteria

The fine aggregate for OPCC, RHCC, ~~LMC~~, or LMC-VE shall be at least 48% but not more than 52% of the total volume of the aggregate in each unit volume of concrete. Proportions shall be based on aggregates in the bulk SSD condition.

The blend of coarse and fine aggregates for OPCC, RHCC, ~~LMC~~, or LMC-VE shall meet the requirements stated in the table below. Aggregate volumes within the repair concrete will be determined based on the bulk SSD properties for each aggregate:

SECTION 509, BEGIN LINE 100, DELETE AS FOLLOWS:

~~(b) RHCC, LMC, or LMC-VE~~

~~RHCC, LMC, or LMC-VE shall be proportioned to meet the following requirements and properties:~~

Portland cement content for LMC	658 lb/cu yd, minimum
Rapid hardening cement content	
for RHCC or LMC-VE	658 lb/cu yd, minimum
Latex modifier for LMC or LMC-VE	3.5 gal/94 lb cement
Maximum allowable water/cementitious ratio	
for LMC	0.400 ^A

REVISION TO 2022 STANDARD SPECIFICATIONS

SECTION 509 – PORTLAND CEMENT CONCRETE PAVEMENT, PCCP, JOINT REPAIR

509.03 Concrete Mix Design
 509.04 Concrete Mix Criteria
 509.06 Trial Batch

509.10 Concrete Mixing and Transportation
 509.12 Placing and Finishing Concrete

- Maximum allowable water/cementitious ratio
 for LMC-VE0.440^A
- Maximum allowable water/cementitious ratio
 for RHCC.....0.450^B
- Slump.....3 to 7 in.^C
- Air Content for RHCC6.5% ±1.5%^D
- Air Content for ~~LMC and~~ LMC-VE0.0% - 6.0%

SECTION 509, BEGIN LINE 129, DELETE AS FOLLOWS:

^D If the RHCC has a permeability of 900 coulombs or less at 56 days, the acceptable range of air content is allowed to be the same as ~~LMC and~~ LMC-VE. Verification of this property will be determined from testing of specimens cast at the trial batch. Testing will be done per AASHTO T 277, with the value determined by averaging the result of two specimens.

^E Concrete beams and cylinders cast for the purpose of evaluating the mix criteria shall be cured in accordance with AASHTO T 23 Section 10.1, Standard Cure conditions. RHCC and LMC-VE shall achieve the minimum modulus of rupture in 12 hours or less. ~~LMC shall achieve the minimum modulus of rupture in 24 hours or less.~~ RHCC, ~~LMC~~, and LMC-VE shall provide opening to traffic within the requirements for maintenance of traffic and lane closure restrictions.

SECTION 509, BEGIN LINE 222, DELETE AS FOLLOWS:

509.06 Trial Batch

A trial batch shall be produced and tested to verify that the repair concrete is in accordance with the appropriate concrete mix criteria for CPM, OPCC, RHCC, ~~LMC~~, LMC-VE, or RSP material. The trial batch shall be conducted prior to production. The equipment used for mixing concrete at the trial batch shall be the same as what is identified in the QCP for use during field production.

SECTION 509, BEGIN LINE 237, DELETE AS FOLLOWS:

	CPM	OPCC	LMC	RHCC, LMC-VE	RSP
Compressive strength	12, 36, 72 h	12, 36, 72 h	12, 24, 48 h	3, 6, 12, 24 h	3, 6, 12 h
Modulus of rupture	12, 36, 72 h	12, 36, 72 h	12, 24, 48 h	3, 6, 12, 24 h	3, 6, 12 h
Plastic testing	air, slump, W/C ratio*	relative yield, air, slump, W/C ratio*	relative yield, air, slump	relative yield, air, slump	slump

REVISION TO 2022 STANDARD SPECIFICATIONS

SECTION 509 – PORTLAND CEMENT CONCRETE PAVEMENT, PCCP, JOINT REPAIR

509.03 Concrete Mix Design

509.10 Concrete Mixing and Transportation

509.04 Concrete Mix Criteria

509.12 Placing and Finishing Concrete

509.06 Trial Batch

*The W/C ratio will be calculated after mix has been tested for slump.

SECTION 509, BEGIN LINE 438, DELETE AS FOLLOWS:

~~LMC and~~ LMC-VE shall be mixed in a mobile type volumetric mixer meeting the requirements of 722.09(a). The Engineer may also allow batching and mixing of OPCC or RHCC in a mobile-type volumetric mixer except the mixer shall carry sufficient quantities of unmixed ingredients to produce at least 2 cu yds and is not required to be self-propelled. Calibration of the mixer shall be in accordance with 722.13.

SECTION 509, BEGIN LINE 458, DELETE AS FOLLOWS:

509.12 Placing and Finishing Concrete

CPM, OPCC, and RSP repair concrete shall be placed within 15 minutes of mixing. RHCC, ~~LMC~~, and LMC-VE shall be placed within five minutes of mixing. All repair concrete shall be placed such that a cold joint does not occur within the limits of an individual, or intersecting, longitudinal or transverse joint repair. Placement may be isolated to one side of a joint if the joint face or joint filler is properly supported. Repair along a transverse joint that intersects a previously repaired longitudinal joint is allowed as described in 509.08.

SECTION 509, BEGIN LINE 477, DELETE AS FOLLOWS:

For RHCC, ~~LMC~~, and LMC-VE, thoroughly soak the cleaned surface and maintain it in a wet condition for at least 2 h immediately prior to placing the repair concrete. Maintaining a wet surface shall be accomplished by covering the soaked surface with wet burlap. The burlap shall be re-wetted as necessary. A layer of white opaque polyethylene film, that is at least 4 mils thick, may be used to offset the need to rewet the burlap. Prior to placing the joint repair material, the burlap shall be removed. Any standing water in depressions, holes, or areas of concrete removal shall be blown out with compressed air or other type of blower sufficient for removal, or by ~~the use of~~ using an approved vacuum system. The surface shall be damp at time of placing the repair concrete. Bonding grout shall not be used.

SECTION 509, BEGIN LINE 517, DELETE AS FOLLOWS:

Immediately upon completion of finishing and texturing of the partial depth joint repair for all material types including CPM, OPCC, RHCC, ~~LMC~~, LMC-VE, and RSP, grout shall be applied with a brush to the entire perimeter of the repair. Proportioning and mixing of the grout shall be the same as previously described in this section for bonding of CPM and OPCC material.

COMMENTS AND ACTION

509.03 Concrete Mix Design
 509.04 Concrete Mix Criteria
 509.06 Trial Batch

509.10 Concrete Mixing and Transportation
 509.12 Placing and Finishing Concrete

DISCUSSION:

This item was introduced and presented by Mr. Reilman who stated that latex modified concrete (LMC), an option in the 509 partial depth joint patching specification, is not performing as intended.

Mr. Reilman proposed to remove the option to use LMC in 509, as illustrated above. Further clarification was provided by Mr. Nelson.

There was no further discussion and this item passed as submitted.

	<u>Action:</u>
Motion: Mr. Reilman Second: Mr. Novak Ayes: 9 Nays: 0 FHWA Approval: Yes	<input checked="" type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn
2022 Standard Specifications Sections referenced and/or affected: Section 509 begin pg. 469	<input checked="" type="checkbox"/> 2024 Standard Specifications Revise Pay Items List
Recurring Special Provisions or Plan Details: NONE	<input checked="" type="checkbox"/> Create RSP (No. 509-R-754) Effective: <u>March 1, 2023</u>
Standard Drawing affected: NONE	<input type="checkbox"/> Revise RSP (No. __) Effective:
Design Manual Sections affected: NONE	<input type="checkbox"/> Standard Drawing Effective:
GIFE Sections cross-references: NONE	<input type="checkbox"/> Create RPD (No. __) Effective:
	<input checked="" type="checkbox"/> GIFE Update <input type="checkbox"/> Frequency Manual Update <input type="checkbox"/> SiteManager Update

PROPOSAL TO STANDARDS COMMITTEE

PROBLEM(S) ENCOUNTERED: INDOT inadvertently created requirements for the concrete mix supplier that were intended to only apply to the aggregate producer.

PROPOSED SOLUTION: incorporate the proposed edits to allow the concrete mix supplier to have the full range of aggregate blends allowed.

APPLICABLE STANDARD SPECIFICATIONS: 501

APPLICABLE STANDARD DRAWINGS: None

APPLICABLE DESIGN MANUAL SECTION: None

APPLICABLE SECTION OF GIFE: None

APPLICABLE RECURRING SPECIAL PROVISIONS: RSP 702-R-739

PAY ITEMS AFFECTED: None

APPLICABLE SUB-COMMITTEE ENDORSEMENT: Ad hoc: Mike Nelson, Jim Reilman

IF APPROVED AS RECURRING SPECIAL PROVISION OR PLAN DETAILS, PROPOSED BASIS FOR USE: add 501 change to RSP 501-R-752. add 502, 506, 702 changes to RSP 702-R-739

IMPACT ANALYSIS (attach report):

Submitted By: Jim Reilman

Title: State Materials Engineer

Organization: INDOT

Phone Number: (317) 522-9692

Date: 10/6/22

STANDARD SPECIFICATIONS, SPECIAL PROVISIONS AND STANDARD DRAWINGS

REVISION TO 2022 STANDARD SPECIFICATIONS and SPECIAL PROVISION

IMPACT ANALYSIS REPORT CHECKLIST

Explain the business case as to why this item should be presented to the Standards Committee for approval. Answer the following questions with Yes, No or N/A.

Does this item appear in any other specification sections? No

Will approval of this item affect the Approved Materials List? No

Will this proposal improve:

Construction costs? Yes

Construction time? N/A

Customer satisfaction? Yes

Congestion/travel time? N/A

Ride quality? N/A

Will this proposal reduce operational costs or maintenance effort? N/A

Will this item improve safety:

For motorists? N/A

For construction workers? N/A

Will this proposal improve quality for:

Construction procedures/processes? Yes

Asset preservation? Yes

Design process? N/A

Will this change provide the contractor more flexibility? Yes

Will this proposal provide clarification for the Contractor and field personnel? Yes

Can this item improve/reduce the number of potential change orders? N/A

Is this proposal needed for compliance with:

Federal or State regulations? No

AASHTO or other design code? No

Is this item editorial? No

Provide any further information as to why this proposal should be placed on the Standards Committee meeting Agenda:

REVISION TO 2022 STANDARD SPECIFICATIONS and SPECIAL PROVISION

DIVISION 500 – CONCRETE PAVEMENT

501.04 Concrete Mix Design

702-R-739 STRUCTURAL CONCRETE AND USE OF OPTIMIZED AGGREGATE GRADATION IN CONCRETE

The Standard Specifications are revised as follows:

SECTION 501, BEGIN LINE 63, DELETE AND INSERT AS FOLLOWS:

The aggregate blend submitted on the CMDS shall produce an optimized aggregate gradation in accordance with ~~ITM 226 sections 6.2.1 and 6.3~~ *the Department provided spreadsheet*. The aggregate blend shall consist of, at a minimum, one concrete coarse aggregate and one fine aggregate, size No. 23. One additional class A intermediate-sized coarse aggregate may be included if approved by the Engineer.

APPROVED MINUTES

REVISION TO 2022 STANDARD SPECIFICATIONS and SPECIAL PROVISION

DIVISION 500 – CONCRETE PAVEMENT

501.04 Concrete Mix Design

702-R-739 STRUCTURAL CONCRETE AND USE OF OPTIMIZED AGGREGATE GRADATION IN CONCRETE

702-R-739 STRUCTURAL CONCRETE AND USE OF OPTIMIZED AGGREGATE GRADATION
IN CONCRETE

*(Revised 12-17-21 and changes, highlighted teal, approved at the
September 15, 2022 SC meeting, item No. 2)*

The Standard Specifications are revised as follows:

SECTION 101, BEGIN LINE 62, DELETE AS FOLLOWS:

~~GGBFS—ground granulated blast furnace slag~~

SECTION 502, BEGIN LINE 22, DELETE AND INSERT AS FOLLOWS:

502.03 Concrete Mix Design

A concrete mix design submittal, CMDS, shall be in accordance with 502.04. The CMDS shall be submitted to the DTE. The CMDS shall be submitted a minimum of seven calendar days prior to production. The CMDS shall use the Department provided spreadsheet and shall include the following:

- (a) a list of all ingredients
- (b) the source of all materials
- (c) the fine to total aggregate ratio
- (d) the absorption of the aggregates
- (e) the SSD bulk specific gravity of the aggregates
- (f) the specific gravity of pozzolan
- (g) the batch weights
- (h) the names of all admixtures
- (i) the admixture dosage rates and the manufacturer's recommended range.

The aggregate blend ~~submitted~~ on the CMDS ~~shall~~ may produce an optimized aggregate gradation in accordance with ~~ITM 226 sections 6.2.1 and 6.3~~ the Department provided spreadsheet. ~~The aggregate blend~~ If an optimized aggregate gradation is used, it shall consist of, at a minimum, one ~~C~~ concrete ~~C~~ coarse ~~A~~ aggregate and one fine aggregate, No. 23. One additional class A or higher intermediate-sized coarse aggregate may be included if approved by the Engineer.

SECTION 502, BEGIN LINE 73, DELETE AS FOLLOWS:

502.04 Concrete Mix Criteria

Chemical admixtures type A, type B, type C, type D, type E, and type F may be allowed if shown on the CMDP. The supplied concrete mix shall include one of the following water reducing admixtures: type A, type D, type E, or type F.

(a) Portland Cement Concrete

The CMD shall produce workable concrete mixtures, with the minimum amount of water, and having the following properties.

REVISION TO 2022 STANDARD SPECIFICATIONS and SPECIAL PROVISION

DIVISION 500 – CONCRETE PAVEMENT

501.04 Concrete Mix Design

702-R-739 STRUCTURAL CONCRETE AND USE OF OPTIMIZED AGGREGATE GRADATION IN CONCRETE

Targets for the CMD:

Portland cement content	564 lb/cu yd ^A
Maximum portland cement content	752 lb/cu yd^A
Minimum water/cementitious ratio	0.340 ^B
Maximum water/cementitious ratio	0.435 ^B
Maximum portland cement reduction	
for slag cement replacement	30%
Slag cement/portland cement substitution ratio.....	1.00 by weight
Maximum cement reduction for fly ash replacement.....	20%
Fly ash/portland cement substitution ratio.....	1.25 by weight
Air Content	6.5%
Minimum modulus of rupture.....	570 psi at 7 days ^C
Relative Yield	1.00

Field Acceptance Properties:

Minimum water/cementitious ratio.....	0.320 ^B
Maximum water/cementitious ratio	0.450 ^B
Slump, <i>formed</i>	2 to 6 in.
<i>Slump, slipformed</i>	1.25 to 3 in.
Air Content	5.0% to 8.0%
Minimum modulus of rupture.....	570 psi at 7 days ^C
Relative Yield	0.98 to 1.02

^A The target cement content during production shall not be adjusted from the value stated on the CMDP.

^B The water cementitious ratio during production shall not deviate more than 0.020 from the target stated in the CMDP and shall not fall outside the limits above.

^C Beams shall be standard cured in a water tank in accordance with AASHTO T 23 and 505.01(a). The water does not need to be saturated with calcium hydroxide. Minimum flexural strength for opening to traffic shall be in accordance with 506.12.

SECTION 506, BEGIN LINE 53, DELETE AND INSERT AS FOLLOWS:

506.03 Concrete Mix Design

A concrete mix design submittal, CMDS, shall be in accordance with 506.04. The CMDS shall be submitted to the DTE. The CMDS shall be submitted a minimum of seven calendar days prior to the trial batch. The CMDS shall use the Department provided spreadsheet and shall include the following:

- (a) a list of all ingredients, including the type of CSA cement,

REVISION TO 2022 STANDARD SPECIFICATIONS and SPECIAL PROVISION

DIVISION 500 – CONCRETE PAVEMENT

501.04 Concrete Mix Design

702-R-739 STRUCTURAL CONCRETE AND USE OF OPTIMIZED AGGREGATE GRADATION IN CONCRETE

- if applicable
- (b) the source of all materials
- (c) the fine to total aggregate ratio
- (d) the absorption of the aggregates
- (e) the SSD bulk specific gravity of the aggregates
- (f) the specific gravity of pozzolan
- (g) the batch weights
- (h) the names of all admixtures
- (i) the admixture dosage rates and the manufacturer’s recommended range.

The aggregate blend ~~submitted~~ on the CMDS ~~shall~~ may produce an optimized aggregate gradation in accordance with ~~ITM 226 sections 6.2.1 and 6.3~~ the Department provided spreadsheet. ~~The aggregate blend~~ If an optimized aggregate gradation is used, it shall consist of, at a minimum, one concrete coarse aggregate and one fine aggregate, No. 23. One additional class A or higher intermediate-sized coarse aggregate may be included if approved by the Engineer.

SECTION 702, BEGIN LINE 38, DELETE AS FOLLOWS:

~~Ground Granulated Blast Furnace Slag..... 901.03~~

SECTION 702, BEGIN LINE 51, DELETE AS FOLLOWS:

~~Grout material for field drilled holes shall be either a high strength, non-shrink, non-metallic, cementitious grout in accordance with U.S. Army Corps of Engineers Specification CRD-C 621 or from the QPL of Chemical Anchor Systems.~~

SECTION 702, BEGIN LINE 64, DELETE AND INSERT AS FOLLOWS:

702.05 Proportioning

Control of PCC for air content, slump, or relative yield will be determined on the basis of tests performed by the Engineer. Concrete and necessary labor for sampling shall be furnished by the Contractor as required by the Engineer. Testing will be in accordance with the Frequency Manual.

A CMDS shall be submitted seven calendar days prior to production and be approved by the Engineer on the Department provided spreadsheet. The absolute volume of the mix design shall be 27.0 cu ft at the design air content of 6.5%.

The aggregate blend ~~submitted~~ on the CMDS ~~shall~~ may produce an optimized aggregate gradation in accordance with ~~ITM 226 sections 6.2.1 and 6.3~~ the Department provided spreadsheet. ~~The aggregate blend~~ If an optimized aggregate gradation is used, it shall consist of, at a minimum, one concrete coarse aggregate and one fine aggregate, No. 23. One additional class A or higher for exposed or class B or higher for non-exposed intermediate-sized coarse aggregate may be included if approved by the Engineer.

SECTION 702, BEGIN LINE 96, DELETE AND INSERT AS FOLLOWS:

REVISION TO 2022 STANDARD SPECIFICATIONS and SPECIAL PROVISION

DIVISION 500 – CONCRETE PAVEMENT

501.04 Concrete Mix Design

702-R-739 STRUCTURAL CONCRETE AND USE OF OPTIMIZED AGGREGATE GRADATION IN CONCRETE

Fly ash from a qualified source may be used as a partial replacement for portland cement. The substitution of fly ash for portland cement will not be allowed in conjunction with the use of ~~ground granulated blast furnace~~ slag cement or blended cement types IP, IP-A, IS, or IS-A. Mix designs will be based on using a maximum 20% cement reduction with a minimum 1.25:1 ash-to-cement replacement ratio, by weight.

~~Ground granulated blast furnace~~ slag cement from a qualified source may be used as a partial replacement for portland cement. The substitution of ~~ground granulated blast furnace~~ slag cement for portland cement will not be allowed in conjunction with the use of blended cement types IP, IP-A, IS, or IS-A or fly ash. Mix designs will be based on using a maximum 30% cement substitution with a 1:1 slag-to-cement ratio, by weight.

SECTION 702, BEGIN LINE 132, DELETE AND INSERT AS FOLLOWS:

Class A concrete shall contain a water-reducing admixture. Class C concrete shall contain ~~either a water reducing admixture or both a water reducing admixture and a retarding admixture-~~ *when either the air temperature is above 70°F or the concrete temperature is above 80°F, or if* The types used shall not be changed during any individual contiguous pour. For class C concrete, the types of admixtures to be used shall be selected based on the expected concrete or air temperature. When either temperature is expected to be 65°F or above, both a water reducing admixture and a retarding admixture shall be used. A water reducing admixture shall be used when both temperatures are expected to be below 65°F unless retardation is required due to the structure design or *due to* the proposed pour sequence such as *for* the requirements for floor slab pours set out in 704.04. ~~If class C concrete contains ground granulated blast furnace slag, the producer may propose an alternate temperature threshold for including a retarding admixture. If either class A concrete or class C concrete is used in slipformed railings, the requirement to use a water reducing admixture is waived.~~ Air-entraining cements will not be allowed in class C concrete.

~~The manufacturer's data, which relates recommended addition rates to ambient temperatures, shall be furnished. The proposed addition rates and adjustments to the rates, as conditions require, will be reviewed for approval using this data and the anticipated temperature. The addition rate shall not be reduced below the minimum rate recommended by the manufacturer, regardless of the concrete or air temperature. The air entraining admixture and water reducing retarding admixture shall be added to the batch separately. The method and equipment for adding water reducing retarding admixture shall be as approved.~~

SECTION 702, BEGIN LINE 732, DELETE AND INSERT AS FOLLOWS:

If high-early strength cement is used, these periods may be reduced as directed. If portland-pozzolan cement, type IP or IP-A, fly ash or ~~ground granulated blast furnace~~ slag cement as a pozzolan is used in the structural concrete, these periods shall not apply and the removal of forms and supports shall be controlled by test beams in accordance with 702.13(h).

REVISION TO 2022 STANDARD SPECIFICATIONS and SPECIAL PROVISION

DIVISION 500 – CONCRETE PAVEMENT

501.04 Concrete Mix Design

702-R-739 STRUCTURAL CONCRETE AND USE OF OPTIMIZED AGGREGATE GRADATION IN CONCRETE

SECTION 702, BEGIN LINE 751, DELETE AND INSERT AS FOLLOWS:

(h) Test Beams

When portland-pozzolan cement, type IP or IP-A, is incorporated into the structural concrete elements listed below, when fly ash or ~~ground granulated blast furnace slag cement~~ is incorporated into the structural concrete elements listed below, or when field operations are being controlled by beam tests, the removal of forms will be allowed when the modulus of rupture reaches or exceeds the following values:

SECTION 706, BEGIN LINE 50, DELETE AS FOLLOWS:

Unless otherwise specified the slip form method may be used as a means to place concrete railing on bridge structures. If the slip form method is chosen, a signed and dated QCP shall be prepared and submitted to the Engineer for acceptance at least 15 days prior to the start of slip form barrier rail placement. The QCP shall include, as a minimum, the Contractor's concrete mix design, including materials sources and admixtures; the Contractor's methods of materials control and testing; the Contractor's proposed method of placement, including finishing and curing; and the corrective action that will be taken when defects are found. The QCP shall also contain documentation that shows the Contractor had a successful trial demonstration of the slip form machine previously and that proper consolidation around the reinforcing bars in the wall was achieved. The slip form paver shall consolidate, screed, and finish the freshly placed concrete in one complete pass in such a manner that a minimum of hand finishing will be necessary to provide a dense and homogeneous railing in conformance with the plans and specifications. ~~The requirement to include a water-reducing admixture in accordance with 702.05 will be waived if the railing is both slipformed and the concrete contains silica fume in accordance with 709.05(e).~~ The slump shall be 1 3/4 in. \pm 3/4 in. The joints may be formed or sawed as long as a satisfactory joint is attained. If joints are to be sawed, the full depth saw cut shall be made before uncontrolled shrinkage cracking occurs and within 48 h of concrete placement. Before full depth sawing, partial depth saw cuts of 2 1/2 in. \pm 1/2 in. at the joint locations may be made as soon as the concrete has hardened sufficiently to enable sawing without raveling. All saw cuts shall be made at the locations shown on the plans or as directed.

COMMENTS AND ACTION

501.04 Concrete Mix Design

702-R-739 STRUCTURAL CONCRETE AND USE OF OPTIMIZED AGGREGATE GRADATION IN CONCRETE

DISCUSSION:

Mr. Reilman introduced and presented this item explaining that the Department inadvertently created requirements for the concrete mix supplier that were intended to only apply to the aggregate producer.

Mr. Reilman proposed to incorporate the proposed edits to allow the concrete mix supplier to have the full range of aggregate blends allowed.

There was no further discussion and this item passed as submitted.

<p>Motion: Mr. Reilman Second: Mr. Novak Ayes: 9 Nays: 0 FHWA Approval: Yes</p>	<p>Action:</p> <p><input checked="" type="checkbox"/> Passed as Submitted <input type="checkbox"/> Passed as Revised <input type="checkbox"/> Withdrawn</p>
<p>2022 Standard Specifications Sections referenced and/or affected: 501.04 pg. 404 Recurring Special Provisions or Plan Details: 501-R-752 INERTIAL PROFILER WITH SMOOTHNESS PAY ADJUSTMENTS FOR PCCP, FIXED INTERVAL BFU: Required for all contracts with any 501 pay items. 702-R-739 STRUCTURAL CONCRETE AND USE OF OPTIMIZED AGGREGATE GRADATION IN CONCRETE BFU: Required for all contracts, except mowing, herbicide, sweeping, light bulb replacement or tree removal/trimming. Standard Drawing affected: NONE Design Manual Sections affected: NONE GIFE Sections cross-references: NONE</p>	<p><input checked="" type="checkbox"/> 2024 Standard Specifications Revise Pay Items List</p> <p><input type="checkbox"/> Create RSP (No. __) Effective:</p> <p><input checked="" type="checkbox"/> Revise RSP (No. <u>501-R-752 & 702-R-739</u>) Effective: <u>March 1, 2023</u></p> <p><input type="checkbox"/> Standard Drawing Effective:</p> <p><input type="checkbox"/> Create RPD (No. __) Effective:</p> <p><input type="checkbox"/> GIFE Update <input type="checkbox"/> Frequency Manual Update <input checked="" type="checkbox"/> SiteManager Update</p>